The Plough, the Loom, and the Anvil.

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THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

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To the friend, whoever he may be, that sent us the extract from the writings of Col. Taylor, and who will find himself attended to in another place, we commend, as we do to all planters who would judge for themselves, the following exposition of the effects of protection on the interests of the planter of *cotton*, of *tobacco*, and of *sugar*. Among these classes, we have a large number of readers who desire to understand for themselves the great question, how far a people may be trusted and may safely go, in the development of their own resources, and the encouragement of their own industry, by special and positive legislation. But before the reader enters on the study of the question, by the lights here presented, we pray him to divest himself of all prejudice, and of all care about party tests or concerns, or any other concern, but the *truth and the public interest*. Why should planters or farmers allow themselves to be blindfolded and led hither and thither, in subserviency to the force of names, or the dictation or the schemes of partisans, of whatever party? Do they not see that the chief aim and pursuit of politicians, is place and power, and that those who generally regulate the machinery of party have usually but little interest in the welfare of the cultivators of the soil? If all the people in the world belonged to one government, then should all cry out for free trade; but, as things are, those only (the few) are most concerned, who desire by monopoly and oppression to keep down the price of labour, leaving those on whose industry their enormous fortunes are built up, no power to consume the products of the plough. In a word, read—and if not convinced, *tell us why!*

CHAPTER ELEVENTH.

HOW PROTECTION AFFECTS THE PLANTER.

HAVING thus shown how the English, or colonial, system operates upon the farmers of England and of the world at large, I propose now to examine how it operates upon the planters.

Of all the products of the earth, cotton is that which is best fitted for clothing purposes, and that which would be most universally used were it accessible to those who desired to use it, which it is not. There are few commodities that can be more easily raised, none that can be converted into clothing at less cost of labour, and yet, so defective are the arrangements for its distribution, that by the time it reaches the consumer it has become so costly that its consumption is almost nothing.

The whole quantity of cotton raised is probably 1,500,000,000 pounds, being about one and a half pounds for each person composing the population of the world; yet, notwithstanding the exceeding smallness of this quantity, the power of consumption throughout the world is so small that the

producers are contending with each other for the possession of the markets: and the competition is so great that whenever the crop of this country reaches 1000,000,000 pounds, it is sold at a price less than the actual cost of production. Some of the countries that formerly exported it to a considerable extent, now raise little more than is needed for their own small consumption; and even here the question of limiting the quantity, as the only way to avoid ruin, has been the subject of anxious discussion. Throughout the South, planters are turning their attention to food, although the market for every description of food is, and must continue to be, glutted, unless we have a change of policy.

There is a perpetual complaint of over-production, and it is matter of rejoicing when, by reason of short seasons, or any other occurrence, the crop is diminished 200,000 or 300,000 bales, the balance producing more in the market of the world than could otherwise have been obtained for the whole. No better evidence need be desired that there exists some error in the distribution.

Over-production cannot exist, but under-consumption may and does exist. The more that is produced, the more there is to be consumed; and as every man is a consumer in the exact ratio of his production, the more he can produce the better it will be for himself and his neighbour, unless there exist some disturbing cause, preventing the various persons desiring to consumé from producing what is needed to enable them to effect their exchanges with the planter, to the extent that is necessary to their comfort.

In examining into the movements of the cotton trade of the world, I may sometimes have occasion to refer to facts already given; and if I prefer to re-state them, it is because, from the great importance of a proper understanding of the subject, I deem it best to collect all the facts necessary to that end under one head.

The two great cotton-producers of the world are India and the United States. The former has long exported to distant markets food and cotton, indigo and saltpetre, bulky articles, the freight and charges upon which absorb nearly the whole product, and, as a necessary consequence, the condition of the people has steadily deteriorated. The difficulty of obtaining food has steadily increased as her manufactures have declined, and repeated famines and pestilences have swept off millions, thus diminishing the power of combination; and she now *therefore* exports men to occupy the places recently occupied by the slaves of Jamaica, Guiana, Demarara, and other of the West India colonies. With each such step, the cotton culture recedes from the low and rich lands towards the higher and poorer ones, and the condition of the cultivator deteriorates, for with each a larger proportion of his product is swallowed up in the cost of transportation.

In the early part of the present century, the manufacturers of India supplied cotton goods to a large portion of the world. England had then, however, invented machinery for its production, and to secure herself in its exclusive use she had prohibited its export, as well as that of artisans, and thus she compelled the cotton to come to the loom, instead of permitting the loom to go to the cotton. By degrees she cut off the foreign market of the manufacturer, but his home market still remained to him, so long as the Company retained the exclusive control of the trade. In 1821, the last year of the monopoly, the export from England to India was but 5,000,000 of yards, and 4,000,000 of pounds of yarn. In 1832, it had reached 60,000,000. In the first half of last year it was 110,000,000 of yards, and 10,000,000 of pounds of yarn. Large as are these figures, they require but little more than 100,000 bales for their production, and would make a consumption of perhaps 220,000 bales per annum, to take the place of that which has

ceased to be raised. With every step in the increase of importation, production has diminished. The culture and the manufacture both have disappeared from the rich lands of Bengal. The fields formerly occupied by this most useful plant have relapsed into jungle, and if we now desire to find the poor cotton planter we must seek him among the hills, where he obtains small crops in return for much labour, and then spends months in the work of transportation to the Ganges, where his miserable product is shipped to Calcutta on its way to England, to return to him at the close perhaps of the second year, giving him a few yards of poor cloth, a combination of cotton and flour, in return for the cultivation of an acre of land.*

Under this system the value of labour diminishes steadily and regularly, and with it the quantity and quality of the cotton produced,† yet Englishmen are accustomed to regard the low price of labour as one of the elements of cheap production, and to look to it as affording good reason to hope for large supplies in future. Thus Mr. Porter informs us that:—

"In the level plains of Candeish, and in many other parts of Hindostan, cotton wool, freed from the seed, could be sold with a profit to the cultivators, at one penny per pound, a cost which is trebled or quadrupled by the expense of conveyance to the ports of shipment."—*Porter's Progress of the Nation.*

The price which remains to the cultivator is one penny per pound, but where "the profit" is to be found when the whole wages consist in an insufficient supply of the poorest food and clothing, followed by famine and pestilence in every case of failure of crops, it is difficult to imagine. Such, however, is the usual mode of treating this subject in England.‡ The more

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* The produce of the great cotton-growing districts on the Nerbudda is carried on oxen, each taking one hundred and sixty pounds, at the extreme rate, in fair weather, of seven miles a day. The distance to Mirzapore, on the Ganges, is five hundred miles, and the cost is two and a half pence, or five cents, per pound. Thence it goes to Calcutta, a distance of eight hundred miles, by water, unaided, I believe, by steam. From another portion of the cotton-growing districts, in the Deccan, the transport occupies a continuous journey of two months, and in the rainy season the road is impassable and the traffic of the country is at a stand. *In the absence of even a defined road*, the carriers, with their pack cattle, are compelled to travel by daylight to prevent the loss of their bullocks in the jungles through which they have to pass, and this under a burning sun of from one hundred to one hundred and forty degrees. If the horde, sometimes amounting to a thousand, is overtaken by rain, the cotton, saturated with moisture, becomes heavy, and the black clayey soil, *through which lies the whole line of road*, sinks under the feet of a man above the ankle, and under that of a laden ox to the knees: and in this predicament the cargo lies sometimes for weeks on the ground, and the merchant is ruined! "Black clayey soils," rich and fertile, are here superabundant, but the poor wretch who raises the cotton must cultivate the high lands that require neither clearing nor drainage, and his masters take half the product of their poor soils while refusing even to make a road *through* the rich ones: yet forcing him to send his cotton to market to be exchanged for cotton cloth manufactured thousands of miles distant. A system better calculated to compel men to continue cultivating the poorest soils, by aid of sticks, could not be devised.

† Import of cotton from India into England:—

1844	88,000,000 lbs.
1845	58,000,000 "
1846	34,000,000 "

Total export of all India to all parts of the world:—

1835–36	1,305,000 cwts.
1836–37	1,557,000 "
1844–45	1,623,000 "
1845–46	1,328,000 "
1846, 8 months	600,000 "

‡ A series of popular lectures on the cotton manufacture has recently been delivered in London, by Mr. Warren, of Manchester. In his first lecture he stated that should the

unproductive labour can be made the lower will be its price, the more confident will be the hope of using it to advantage, and the larger will be the sums expended in an effort that must prove for ever vain, while the people shall continue to be prevented from consuming on the land the products of the land.*

The deterioration of quality is due to the recession of cultivation from the lower and richer lands; and that recession is a consequence of the system that has ruined the manufacturers of India, and destroyed the power of combination of action. We know the superiority of the sea-island cotton. In Demarara, cotton plantations have always succeeded better on the sea-coast than in the interior. So was it in India. Salt manure is deemed to be of absolute necessity if superior quality be desired, as it gives a staple at once strong and silky. Such being the case, it is useless to attempt improvement, when day by day the cultivation recedes from the neighbourhood of the sea, producing in England a strong desire for the making of railroads by which it may be enabled to make its way from the hills without costing more labour for its transportation than had been required for its production. Every such effort must prove a failure. Free trade with England drove it to the hills. Freer trade will drive it to hills yet more distant. In some cases it is thought that if the poor people could be provided with carts, they could extend the culture with advantage, but the use of such vehicles supposes the previous possession of something like laid-out roads, and those are luxuries with which most of India is yet unprovided.

Like the people of India, those of the Southern States of the Union have, thus far, had a bulky outward trade, that had, of course, to bear all the expenses of the voyage out and home. For a time, this prospered. India was distant from the machinery of conversion and Carolina was near, and while it still continued necessary to resort to the former for supplies, the price of that raised in the latter was the price in India, *plus* the difference of transportation. England was a sort of home market in which the planter obtained twenty or thirty cents per pound. By degrees, however, the near supply rose above the near demand, and it became necessary to seek for

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manufacturing population of that country increase during the next ten years in the ratio in which it has done during the last, it will become necessary, in order to employ them, to secure a permanent and cheap supply of cotton. This can be done, he thinks, by cultivating it in British India, where, on the authority of Major-general Briggs, Sir Charles Forbes, and others, there can be produced a supply sufficient for the wants of the entire world, equal in quality to the article supplied from New Orleans, *and cheaper than it by one-half.* He states the wages of American slave labour to be equal to about 1*s.* 6*d.* per day, while *that of the free Hindoo is only about two pence.* The advantages to be derived from such a course, he stated to be the certainty of a good and adequate supply at a cheap rate, the consolidation of our Indian possessions by the means of commerce, and the emancipation of the American slaves, by rendering their labour profitless to the owners.

* The "London Chronicle," of a late date, has an article showing that the efforts which have been put forth during the last few years to make India a cotton-growing country that might rival the United States have entirely failed. It notices the failure and abandonment of the experiments in cotton cultivation that have been carried on, under Dr. Wight's superintendence, at Madras. This enterprise, which had for its object the production of an article less palpably inferior to the cotton of America than the present badly-picked and indifferent Indian commodity, was zealously, and even lavishly, supported by the local government; but the late failure of a similar experiment in Bengal, after an outlay of about £100,000, had already given fair warning of the probable issue of Dr. Wight's efforts in the sister presidency, and with its abandonment would seem to settle the question that India will not again become, as it once was, a great cotton-growing country. In 1796 America did not export a single pound. In 1834 she exported as much as all the rest of the world put together. And in 1846, out of 467,856,274 lbs. imported into this country, 401,949,893 lbs. came from the United States, while only 34,556,143 were supplied by the East Indies and Ceylon! The total value supplied from India in 1845 did not exceed £600,000.

markets for cloth and yarn in India and China, in which the price realized by the producer could not exceed that at which it could there be sold, *minus* the difference of transportation. The necessary effect of this was to diminish the productiveness of Indian labour, and the power to consume cotton, and of course to increase the quantity to be forced upon the world, and with every step in course of this operation, there has been increased competition on the part of the American grower; the result of which is, that the Indian producer is ruined, and the American one is saved from ruin only by destructive operations of nature, frosts, freshets, and crevasses, by aid of which the supply is retained within the limits of demand.

The average consumption of this country is not less than thirteen, and is, most probably, fifteen pounds per head; and it is less, by at least one-half, than it would be but for the heavy cost, in labour, to the consumer. The average consumption of the world, outside of the Union, is little more than one pound per head, or about one-thirtieth of what it ought to be; and yet cotton has become almost the weed of the world, and men are everywhere desiring to substitute in its place something that could be better grown elsewhere. On the high lands they substitute wheat, which would grow better farther north. On the low lands they raise sugar, which would be much more productive farther south. Here are serious discords, and it is important that we trace the cause of their existence, with a view to provide a remedy for a state of things so unnatural.

With a view that we may do so, I give the following

SUMMARY STATEMENT OF CROPS, CONSUMPTION, &c., OF AMERICAN COTTON, FOR TWELVE YEARS.*

	Crops, as shown by receipts the 31st Aug.	Consumed in the U. States, year end'g 31st Aug.	Stock at the ports end of the year 31st Aug.	Imports of American Cotton into Great Britain, from 1st Jan. to 31st Dec.		Total am't. of American Cotton consumed in Great Britain.	Stock of Am. Cotton in Gt. Britain, Dec. 31.	Average quot. of Uplands in Liverpool.
1836—7	1,422,930	222,540	109,036	1837	844,812	778,492	158,100	7 *d.*
1837—8	1,801,497	246,063	68,961	1838	1,124,800	913,328	316,100	7
1838—9	1,360,532	276,018	69,963	1839	814,500	813,488	242,300	7 7/8
1839–40	2,177,835	295,193	78,780	1840	1,237,500	1,018,784	403,000	6
1840—1	1,631,945	297,288	72,479	1841	902,500	809,900	344,600	6 1/4
1841—2	1,684,211	267,850	31,807	1842	1,013,400	893,256	373,400	5 3/8
1842—3	2,379,460	325,129	94,486	1843	1,396,800	1,110,046	593,200	4 5/8
1843—4	2,030,409	348,744	159,772	1844	1,246,900	1,126,008	654,900	4 7/8
1844—5	2,415,448	389,006	98,420	1845	1,499,600	1,289,808	809,100	†4 3/8
1845—6	2,100,537	422,597	107,122	1846	937,000	1,280,096	397,800	4 7/8
1846—7	1,778,651	427,967	214,837	1847	874,100	867,516	286,200	6 3/8
1847—8	2,347,634	531,772	171,468	1848	1,375,400	1,189,500	348,300	4 1/4

The stock in our own ports, Aug. 31, 1836, appears to have been,			109,000
That of American cotton in English ports,			90,000‡
The crops of the twelve years, from 1836–7 to 1847–8, were			23,571,000
To which must be added, for the additional consumption in the South and West, in the last two years,			125,000
	Total,		23,805,000
The stock in port, and in G. B. at the close of the season 1847–8,			520,000
	Consumption of twelve years,		23,375,000
Thus divided—English,		12,100,000	
American,	4,052,000		
Additional, as above,	125,000		
		4,177,000	
Leaving for the rest of the world,		7,098,000	
			23,375,000

* From the New York Courier and Inquirer.

† Duty, 5/8 *d.* per lb. taken off by Act of Parliament, passed 8th May, 1845.

‡ The imports of 1837 exceeded the consumption by 66,000 bales, and the stock, at the close of the year, was 158,000, from which, if we deduct the 66,000, there remain 92,000.

	Average of the first Two Years.	Total Average.	Average of last Two Years
English,	846,000	1,008,000	1,028,000
American,	235,000	348,000	542,000
All other,	444,000	591,000	548,000*
	1,525,000	1,947,000	2,118,000

From this we see that the average consumption of the twelve years exceeded that of the first two, in the following ratio:—

English,	18 per cent.
American,	50 " "
All other,	22 " "

But when we compare the first and last two years of the period, we obtain the following results:—

English,	21 per cent.
American,	125 " "
All other,	23 " "

The portion of Europe that has most fully adopted the system of protection being the *Zoll-verein*,† it will be useful to compare the growth in their consumption with that of Great Britain and Ireland.

The imports of raw cotton into *Prussia* before the formation of the Tariff-league or *Zoll-verein*, remained from 1827 to 1835 stationary at 44,000 cwts. per annum.‡ That of yarn increased from 1823 to 1835, from 61,000 to 115,000 cwts. The total increase of twelve years, was from 105 to 159,000 cwts., or from 30 to 45,000 bales. The following shows the growth from that period in the territories of the confederation:—

	1836.	Average from 1837 to 1841.	1843.	1845.
Raw cotton, quintals	152,364	200,093	306,731	443,887
Cotton twist and wadding, do.	244,869	351,884	475,564	574,303
	397,233	551,977	782,295	1,018,190

The quantity has more than doubled, and the home consumption has increased about 75 per cent.§ in a period during most part of which our own consumption had remained stationary.‖ The quantity of twist and wadding imported from Great Britain had increased 135 per cent. in a shorter period than was required in the latter for an increase in her home and foreign consumption of only 21 per cent. The power to import thus grew with the power of production. It is obvious that the consumption tends, and must tend, to increase most rapidly where there is the least intervention between the producer and the consumer, and equally so that the English demand, based upon the principle of intervention between the two, and consequent increase of cost to the consumer, cannot be largely and permanently increased. That of 1846–7 was less than that of 1837–8, and the difference between that of 1839–40 and that of 1847–8, great as was the fall of prices, was but 171,000 bales.

The great increase in the consumption of the *Zoll-verein* is due to pro-

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* This period embraces a season of war and convulsion over the whole continent.

† De Bow's Commercial Review, Vol. V. p. 267.

‡ Merchants' Magazine, Vol. XIII. p. 286. § Ibid.

‖ The increase of consumption after the formation of the Union was very rapid. As early as 1838, it was said, that "The cotton manufacture of Saxony had already become of twice the extent it had reached before the Union."—*Porter's Progress of the Nation*, Vol. II. p. 198. The quantity of cotton hosiery made in Saxony has increased immensely of late, and from its cheapness has not only secured the monopoly of the markets of the Union, but has also been shipped largely to the United States.

tection. If, now, from the additional British consumption we deduct the *additional* yarn sent to this one protected country, we shall be enabled to see how trivial is the power of increase in the *unprotected* world. The account will then stand thus:—

	First two years.	Last two years.	Ratio of increase.
English	846,000	958,000*	13 per cent.
Zoll-verein (1836)	100,000	230,000*	130 "
American	235,000	542,000	125 "
All other	344,000	378,000	10 "

In the one case England took **846,000** at **7*d.***, total . **$53,000,000**
In the other, **958,000** at **5½*d.*** **48,000,000**

In both, the price was fixed in her own ports, and regulated by her own power of purchase. Had our home consumption absorbed **200,000** additional bales, thus reducing the supply to **750,000**, the price would have been **8*d.*** and the amount would have been **$54,000,000**
and the product of the whole crop would have been almost doubled.

The consequence of this incapacity of extending her foreign market is, of course, the accumulation of large quantities in English ports, accompanied by a fall of prices, by aid of which the English consumer obtains a larger quantity for the labour that he can afford to give in exchange for the materials of clothing, and that tends to decrease as his labour becomes more unproductive, and as the disposition to "fly from ills they know" increases. This will be seen by the following table:—

Crop. Bales.	Average price.	British and Irish consumption. Quantity.	Value.
1839—1,368,000	14·5 cents.	73,000,000 pounds.	$10,585,000
1840—2,180,000	8·6 "	172,000,000 "	14,620,000
1841—1,634,000	10·3 "	97,000,000 "	9,991,000
1842—1,684,000	8·2 "	97,000,000 "	7,954,000
1843—2,388,000	6 "	120,000,000 "	7,200,000
1844—2,030,000	8·1 "	124,000,000 "	10,116,000
1845—2,100,000	5·9 "	164,000,000 "	9,696,000
1846—2,101,000	7·3 "	147,000,000 "	10,731,000
1847—1,778,000	10·1 "	77,000,000 "	7,777,000
1848—2,347,000	7 "	130,000,000 "	9,100,000
1,961,000	8·6 "	1,201,000,000 "	9,777,000

The total home consumption by the **27,500,000** composing the population of the United Kingdom, was thus but **1,200,000,000** pounds, or an average of **120,000,000** per annum, giving **4⅓** pounds to each individual, supplied at a cost so low as to ruin the producer. The average of the first two years was **122,500,000**, while that of the last two years was but **102,500,000**, notwithstanding an increase of population that should have brought it up to **140,000,000.**

From this statement it appears clearly that the power of the people of Great Britain and Ireland, to be customers to the cotton planters of the world, cannot go much beyond **$10,000,000**; and that, instead of increasing with the population, it tends decidedly to diminish. The reason of this appears to me obvious. The people of England are perpetually engaged in the effort to sell the products of their labour in distant markets, in competition with low-priced labour, and therefore at the *lowest* price; receiving payment in food and other articles of consumption produced in distant markets, which come to them burdened with enormous cost of transportation, and therefore

* I have deducted and added only 70,000 bales, supposing the last two years' export not to have been as great as that of 1845.

obtained at the cost of much labour. The natural growth of production elsewhere tends to increase the supply of raw materials, but the power to pay for them does not increase, because the labour of British subjects, home and colonial, instead of becoming more productive of commodities to be given in exchange, is becoming less so from month to month and from year to year, and yet into that constantly diminishing market are thrown all the surplus products of the world, that the price of the whole product may there be fixed. The effect of this is to throw on the planters the loss that should belong to themselves, and thus enable them to supply themselves at the *lowest* price; whereas, whenever the cotton planter shall cease to be dependent upon them for his market, they will again, as formerly, be obliged to buy at the *highest* price. The product of British labour, measured in the article of first necessity, food, is small, and the surplus remaining, to be applied to the purchase of clothing, is therefore very small indeed. They are incessantly engaged in supplying low-priced, and often worthless clothing to the world, and are therefore unable to clothe themselves.

That the tendency is downward, seems scarcely to admit of a doubt. A few years since, by a great effort, the poor-rates of England were reduced to less than £4,000,000. They have since risen gradually, and those of 1848 were £7,817,000, or $38,000,000. Every ninth person is a pauper. In Scotland, the destitution of a large portion of the population is frightful. The people of the Northern and Western Highlands are in a state of pauperism; and Glasgow and its vicinity present a scene of wretchedness scarcely, if at all, to be exceeded in the world. Ireland is exhausted. There being no separate accounts of the imports into that kingdom, it is not possible to ascertain the present consumption of cotton, but the condition of the people is now far lower than at the dates of the following returns:—

The whole import of cotton into Ireland from all parts of the world, in the twenty years from 1802 to 1821 both inclusive, amounted to 538,542 hundred weights, or about 150,000 bales, being an average of 7500 bales per annum, and the whole import of cotton yarn, to 19,995,350 pounds, or about 1,000,000 pounds per annum, the product of about 4000 bales, making a total of 11,500 bales.* The amount of cloth imported is not given.

In 1825, the year of great expansion everywhere, with an export to Great Britain of agricultural products amounting to almost $35,000,000, we find the import of cotton-wool to have been 4,065,930 pounds, and the import of cotton cloth to have been 4,996,885 yards, making in the whole about 6,000,000 pounds, or about 18,000 bales of cotton, in all its forms, required for the supply of almost 8,000,000 people; being about three-quarters of a pound per head.

In subsequent years, no information can be obtained, owing to changes in the mode of keeping the custom-house accounts; but in a general report on the state of the trade of Ireland, made by a committee whose object would not have been promoted by under-estimates, it is stated that the import of cotton-cloth into that kingdom was, in 1835, 14,172,000 yards, being equal to about 4,000,000 pounds of cotton, or half a pound per head. What quantity of cotton-wool, or yarn, was imported at that time, cannot be ascertained, but it is elsewhere shown that some of the largest establishments for manufacture, of a period somewhat earlier, had disappeared, and that the calico printers were in a state of bankruptcy.†

We may now look to the consumption of the colonies of Great Britain. In the years 1845, '46, '47, the export to them was as follows,‡ in millions of pounds:—1845, 85; 1846, 87; 1847, 67. Of this, however, large

* Ireland before and since the Union, by R. Montgomery Martin, pages 56 to 60. † Ibid.
‡ Merchants' Magazine, Vol. XIX. 600.

quantities went to Gibraltar, Malta, Jamaica, and other places, to be smuggled into Spain, Mexico, and other countries, and the consumption of the colonies of themselves could not have exceeded 70,000,000, or about 170,000 bales, for more than 100,000,000 of inhabitants. During this time, the average price was a fraction over 7 cents, and it follows that $5,000,000 is the maximum amount of trade maintained, through the medium of England, by the planting States of the Union, with a large portion of the people of the world, although producing two-thirds of the whole quantity of this necessary commodity for the use of the world.

Taking the total consumption of the United Kingdom and the colonies, we now have the following quantities :—

	1845.	1846.	1847.
Millions of pounds . .	239 .	234 .	144

Need any better evidence be desired of the poverty inflicted by the system upon all the people subject to it, than the fact that an increase of price equal to one cent per yard reduces the consumption almost one-half?

Let this be compared with the growth of consumption in the protected markets of Germany and the United States, and it will be seen how steady is the protected, or real free-trade, system, compared with the perpetual change of the monopoly one. How great, too, the difference in the consumption per head!

While England and all her vast possessions consumed but 144,000,000
the consumption of the *Zoll-verein* (population 25,000,000)
had grown in nine years from 45,000,000 to . . . 115,000,000
and that of the Union was 243,000,000

We have seen how slow has been the growth of the English demand, and it may now be well to see the wasteful and exhausting process by which even this has been obtained. "The extremely low price of cotton," say Messrs. Rathbone, Brothers & Co.,* "has encouraged the manufacture of a very inferior class of goods, which require a great weight of cotton compared to the labour expended on them, and *of which the make ceases entirely when cotton is moderately high.* The demand for very coarse yarn," they continue, "is always large at very cheap prices, but in the year just closed it has exceeded all precedent,† particularly for export, chiefly to the Levant, and in some instances to accelerate its make, *it has not passed through all the usual processes.* It is on the consumption of cotton for these classes of goods," they add, "that even a moderate advance in prices is apt so immediately to tell." The cotton thus forced into the Levant goes to the same countries that before were supplied from India, and thus is the poor Hindoo deprived of another portion of his market, the necessary consequence of which must be a further depression of prices, and increased inability to continue the work of production. The decline in the trade of Western India is remarkable, and is probably the result of this flooding of the Asiatic markets with half-made cotton goods.‡

* Circular, January 3d, 1849.

† The prices of ordinary cotton ranging during a large portion of the year, from 3*d.* to 4*d.*

‡ The average imports of Bombay for the five years ending December 31, 1846, were 63,000,000 of rupees, while those of 1846 were only 52,000,000. The exports were as follows :—

		5 years ending December 31, 1846.	1846.
Cotton,	bales	380,987	257,743
Wool,	lbs.	3,421,976	4,626,470
Coffee,	lbs.	3,140,821	1,529,900
Pepper	cwts.	47,260	46,182
Indigo,	lbs.	135,833	55,928
Ivory	cwts.	5,764	6 109

It has been seen how large was the export to India in the first six months of the year, and now we see by the newspapers of the day what are the consequences. Low as was the price of cotton, the speculation has not answered. The markets are glutted, and the prices are unremunerative. "Great caution," it is said, "must now be exercised, or the exporting houses will suffer exceedingly."* The small rise in price has already caused many mills to commence working short-time, and the operatives in them are thus deprived of the power to purchase clothing. It is the most gambling, and most extraordinary system, and the most destructive to the interests of the agricultural population of the world that has ever been devised. The fever and the chill succeed each other with such rapidity, that we are scarcely advised of the arrival of the one, before we see indications of the approach of the other. The cause of this difficulty of extending the sale of cotton in distant markets is to be found in the fact that the labour-cost of cloth so obtained is great. We have seen that the extension of the manufacture in this country for a few years following the passage of the tariff of 1828 was rapid, and that it then became almost stationary under the Compromise, yet the import not only did not increase but decreased until it reached the lowest point in the period of 1842–43. The labour-cost of clothing was steadily increasing, but as the tariff of 1842 came into operation the labour-cost diminished, and there arose a power to pay for finer cloths from abroad, and thus the import and manufacture increased together. If we desire to see the operation of this, we need only take a single farmer of Tennessee or Kentucky, who obtains 30 or 40 bushels of corn in return for the labour bestowed on an acre of land, and is happy to sell it at 20 cents per bushel,† when the price in Liverpool is 75 or 80 cents. Thirty-five bushels yield here $7, which is about the cost of 70 yards of tolerable cotton-cloth, plain and printed, when received on his farm. To produce those 70 yards would require 20 pounds of cotton, or one-twentieth of the product of a well-cultivated acre. To convert those pounds into yards of cloth requires far less than half the capital, and half the labour required for their original production. Taking, however, the conversion at one half, and adding that proportion to the number of pounds, we obtain the equivalent of 30 pounds of raw cotton as the return for 35 bushels of corn, and yet that corn sells, at the place of consumption, for as much as would purchase almost a bale of cotton. It is obvious that though the money-price of the cloth is low, the labour-price is high, and it is by the latter that the power of consumption is measured. The cloth, too, is worthless. As far back as 1832, the quantity of flour required for the use of the cotton factories of England was stated at *forty-two millions of pounds*,‡ or almost as much as the weight of 100,000 bales of cotton, all of which is traded off as cotton, to the poor consumers of distant lands, who are thus defrauded and impoverished.

Bad as is even this, it is far from all the loss that is sustained. The corn is sent from the land, and the farmer loses the refuse. The land is impoverished, and its occupant is compelled to fly to other lands, to be again impoverished. ***The loss from this source alone is far more than the value of all the imports into the Union, of every description, from all the manufacturing nations of the world.*** The apparently cheap clothing is very dear. It is obtained at the cost of much labour, and of little value when obtained.

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* Morning Herald, November.

† "Tennessee grows more corn than any State of the Union. A few months since we took the liberty to ask a farmer from Tennessee who had a drove of hogs in our streets, the price of corn in the region from whence he came. He replied that it was worth ten cents, and wheat fifty cents a bushel."—*Augusta Chronicle, May*, 1849.

‡ McCulloch's Commercial Dictionary, article *Cotton*.

What is true of Tennessee and India, is equally so of the other parts of the world that are compelled to depend on England for supplies of cotton cloth. The poor Russian obtains less than a pound of cotton for a bushel of wheat, and thus he gives ten days' labour for one; whereas, if he could have cotton converted on the spot, by the man who ate his food, he would obtain day's labour for day's labour. So is it with the German, the South American, the Mexican, the Italian, the Spaniard, and the Turk. The system tends to prevent concentration and combination of action, and to diminish the value of labour throughout the world, and it is because of this, that almost all nations are endeavouring to shut out the manufactures of Great Britain. Everywhere, however, they are met by the smuggler, now regarded by the highest authorities of Great Britain as the greatest of reformers. Gibraltar is maintained for the purpose of smuggling goods into Spain. Exhausted Portugal receives millions of pounds of cotton goods, likewise to be smuggled into Spain; and thus is that unfortunate country kept in a state of poverty, because the people of England are pleased to believe that it is profitable to buy cloth produced abroad, while the labourer at home is idle for want of demand for his labour, and the food perishes on the ground for want of mouths to eat or roads to transport it.

If the system tends to the exhaustion of the people who have to buy cotton at so high a price, not less does it tend to the exhaustion of those who have to produce it, and who are compelled to sell at whatever price the people of England think proper to fix upon it. Why that is so, may, perhaps, be ascertained by an examination of the following table:—

Crop.	Stock in Liverpool, Dec. 31. Bales.	Price.	Gross proceeds of sales of American cotton in Liverpool, from which are to be deducted freights, commissions, &c. &c. Weight of bale estimated at 450 pounds.
1837—1,422,000	158,000	7*d.*	$49,000,000
1838—1,801,000	316,000	7	57,000,000
1839—1,360,000	242,000	7 7/8	57,000,000
1840—2,177,000	403,000	6	55,000,000
1841—1,631,000	344,000	6 1/4	45,000,000
1842—1,684,000	373,000	5 3/8	47,000,000
1843—2,379,000	593,000	4 3/8	47,000,000
1844—2,030,000	654,000	4 7/8	49,000,000
1845—2,415,000	808,000	4 3/8	51,000,000
1846—2,100,000	597,000	4 7/8	56,000,000
1847—1,778,000	286,000	6 1/4	51,000,000
1848—2,347,000	348,000	4 1/4	45,000,000

The quotations of the latter portion of the last year were below the average, being about 4*d.*, and about that point they remained for several months, until the chief portion of the crop had been shipped. The unfavourable prospects for the new crop tended to prevent a further fall, but it is impossible to tell what would have been the price had that of the present year increased in its proper ratio to the population engaged in its production. It would certainly have fallen much below even fourpence. An examination of this table will, I think, enable us to understand the cause of the present extraordinary state of things. A large portion of the crop of the present year has been destroyed by frosts, freshets, &c., and that fact, instead of bringing with it distress and ruin, has brought with it increased activity and life among planters, and increased power to consume cloth, sugar, coffee, &c. Why is it so? The answer can, I think, readily be given.

The amount that can be collected by Great Britain, in payment for American cotton, consumed at home and abroad, and for freights, commissions, &c., appears to be limited to somewhere between $45,000,000 and $57,000,000,

with an obvious tendency to diminution. Of the crop of the past four years, the quantity consumed among ourselves, and exported by us directly to foreign ports, has not varied materially from 1,000,000. The balance has gone to England, who has $57,000,000 with which to pay for 900,000 bales, say $63 a bale. The crop, however, reaches 2,400,000 bales, and we send her 1,400,000; all of which have to be compressed within a smaller sum than 57,000,000, for now there are large expenses for storage, interest, risk, &c., and the amount falls to 50,000,000, leaving the planter but $36 a bale, out of which he has to pay the high freights consequent upon large crops, and upon a large number of bales, instead of that moderate freight that would have accompanied small ones, and upon a small number of bales. The price obtained in England fixes that of the crop, and the result is as follows:—

1,900,000 bales at $63,	$120,000,000
Less low freights, at home and abroad, upon a small quantity.	
2,400,000 bales at $36,	86,000,000
Less high freights, at home and abroad, upon a large quantity.	

It is obvious that it would have been far better that the 500,000 bales should have been burned, or destroyed by frost before being picked. The crop of 1844 was 812,000,000 pounds, and the product was estimated at $65,772,000
In 1845, it rose to 958,000,000, and the product fell to . 56,000,000
In 1847, it fell to 711,000,000, worth 72,000,000
In 1848, it rose to 1,100,000,000, and until the occurrence of frosts and freshets, the prospect was that it would not average at New Orleans more than 5½ cents, or . . 60,000,000

The gradual but steady subjugation of the planters to the system may be seen from the following facts: From 1830 to 1835, the price of cotton here was about eleven cents, which we may suppose to be about what it would yield in England, free of freight and charges. In those years our average export was about 320,000,000, yielding about $35,000,000, and the average price of cotton cloth, per piece of 24 yards, weighing 5 lbs. 12 oz., was 7*s.* 10*d.*, ($1·88,) and that of iron £6, 10*s.*, ($31·20.) Our exports would therefore have produced us, delivered in Liverpool, 18,500,000 pieces of cloth, or about 1,100,000 tons of iron. In 1845 and '46, the home consumption of the people of England was almost the same quantity, say 311,000,000 pounds, and the average price here was 6¼ cents, making the product $20,000,000. The price of cloth then was 6*s.* 6¾*d.*, ($1·57½,) and that of iron about £10, ($48,) and the result was, that we could have, for nearly the same quantity of cotton, about 12,500,000 pieces of cloth, or about 420,000 tons of iron, delivered in Liverpool. Dividing the return between the two commodities, it stands thus:—

	Average from 1830 to 1835.	1845–6.	Loss.
Cloth, pieces, -	9,250,000 .	6,250,000 .	3,000,000
And iron, tons, -	550,000 .	210,000 .	340,000

The labour required for converting cotton into cloth had been greatly diminished, and yet the proportion retained by the manufacturers was greatly increased, as will now be shown:—

	Weight of Cotton used.	Weight of Cotton given to the planters.	Retained by the manufacturers.
1830 to 1835, - -	320,000,000 -	110,000,000 -	210,000,000
1845 and 1846, - -	311,000,000 -	74,000,000 -	237,000,000

In the first period, the planter would have had 34 per cent. of his cotton returned to him in the form of cloth, but in the second only 24 per cent. The grist miller gives the farmer from year to year a larger proportion of the product of his grain, and thus the latter has all the profit of every improvement. The cotton miller gives the planter from year to year a smaller portion of the cloth produced. The one miller comes daily nearer to the producer. The other goes daily farther from him, for with the increased product the cost of transportation is increased.

We may now inquire into the cause of the accumulation of stock in the English market, and if that can be ascertained, we shall be able to see why it is that cotton has fallen so ruinously low.

Of the crop of **1828–29**, our own consumption was . . **118,000**
Of those of **1832–33** and **1833–34**, the average was . . **195,000**
Of that of **1834–35**, it was **216,000**

having almost doubled in six years, and with a tendency to an increase in the ratio of advance; and this increase was attended by no diminution in our consumption of foreign cloth.

Of the crop of **1841–42**, we consumed only . . . **268,000**

with a great diminution in the consumption of foreign cloth.

Of that of **1847–48**, ... **607,000**

with a large increase in the consumption of foreign cloth, the total consumption having much more than doubled in a similar period of time. In the period intermediate between **1835** and **1843**, our consumption had been stationary. Had it not been interfered with by the action of the Compromise bill, it would certainly have doubled in that period, and probably much more than doubled. If, however, we assume an increase of only **12½** per cent. per annum, or quadruple the increase of population, the following would have been the home demand:—

1835–6 . .	243,000 bales	1839–40 . .	388,000 bales
1836–7 . .	273,000 "	1840–41 . .	437,000 "
1837–8 . .	307,000 "	1841–42 . .	491,000 "
1838–9 . .	345,000 "	Total . .	2,484,000
The actual consumption was			1,844,000
Difference			640,000

The loss of demand to the planter was thus more than *the whole quantity* that was left unsold when the market broke down.

Following up the consumption to the present time at the same rate, we obtain the following results:—

1842–3 . .	552,000 bales	1846–7 . .	883,000 bales
1843–4 . .	621,000 "	1847–8 . .	994,000 "
1844–5 . .	680,000 "	1848–9 . .	1,019,090 "
1845–6 . .	785,000 "		5,550,000
The actual consumption has been about			3,000,000
Difference in seven years, ...			2,550,000
Total difference, ...			3,190,000

No one can doubt that the progress would have been greater than is here set down, and yet with no more than this, we should have used above **3,000,000** bales that we have not used. Had we done so, the producer of cotton would have fixed the price and not the buyer. Under such circumstances would it have fallen below ten or twelve cents per pound? Would it not, on the contrary, have risen to fourteen or fifteen, unless the crop had been much increased? I think it would, and I feel assured that it will do so in a very brief period from the thorough adoption of a system

that will establish here such a market for labour as will enable us to consume on the land the products of the land, and my reasons for so believing are as follows:—

The good cotton lands of India are now waste. To render them productive requires labour and capital. To induce the application of either, the labourer must have wages and the owner of capital must have profits. Both must rise in price with any increased demand for them. Such demand must arise when England shall find herself compelled to look to India for any increased supply, as she must do so soon as our home demand shall have risen to the extent of 1,000,000 bales per annum, as it will do in the next three years, if permitted so to do.

It will be asked, what should we do with all this cloth? In reply, I say again, and I repeat it because it is essential that it be recollected—*every man is a consumer to the whole extent of his production, whatever that may be.* Had the tariff of 1828 remained unchanged, the production of coal in the same period would have reached 15,000,000 tons, for furnaces and rolling-mills would have been built throughout the country, and railroad bars would have been made by hundreds of thousands of tons, and treble the roads would have been made without producing bankruptcy. The demand for roads, and mills, and furnaces, and steam-engines of every description would have created a vast demand for labour that was wasted, and the surplus earnings would have gone to the purchase of clothing and other of the conveniences and comforts of life, and there would have been made a market on the land for the products of the land, to the extent of hundreds of millions of dollars, enabling both farmer and planter to improve the machinery of production and transportation, growing rich instead of remaining poor as they have done. With each such step the immigration from Europe would have increased, and as every man would at once have become a producer, every one would have been a consumer. The Englishman would consume twelve pounds, where before he consumed but four, and the Irishman would consume twelve where before he consumed but one, while freights to Europe would be so far reduced that the price of cotton in New York would be almost as high as in Liverpool.

It will be observed that the quantity here set down for 1846–7 exceeds, by only one-third, that which we actually did consume. Had immigration continued to increase, from 1834 to the present time, at the rate at which it was then advancing, our population would be greater than it now is by 20 per cent., providing for nearly the whole quantity, without any allowance for increased consumption by the population previously existing. The whole of them would have needed large supplies of coffee, silk, and a thousand other things from abroad, for much of which we should have paid in cotton goods. The facility of obtaining iron would have given roads to the farmer and planter, and all would have had more of the proceeds of their labour to apply to the purchase of clothing. The planter himself, and his people, would now be consuming three yards where now they consume but one; and the home-market would now be absorbing 1,200,000 bales, instead of a million. What then would be the price of cotton, even with a crop of 3,000,000? Would it not be $60 a bale, yielding him 180 millions instead of 80? I think it would.

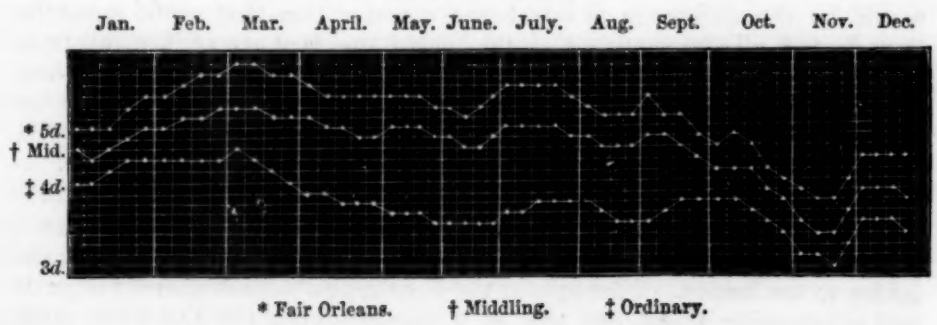
In 1845 and 1846, the planter supplied 311,000,000 of pounds, for which, *delivered on the sea-board*, he could have had 74,000,000 lbs. *delivered in Liverpool*, the freight and commissions, homeward, being paid by him. He gave 156,000,000 for 37,000,000, the charges upon which, without duty, would have reduced it to 30,000,000 on the plantation, and probably less. The 30,000,000 had, however, been twisted and woven, and the difference,

one hundred and twenty-six millions, was what he gave for the twisting and weaving of *thirty millions*. The average work of operatives, men and women, boys and girls, exceeds the conversion of 3000 pounds of cotton into such cloth, per annum. The planter, then, gave 126,000,000 of pounds of cotton for the labour of 10,000 persons, chiefly boys and girls, and he transported 156,000,000 to market. Were he to calculate the cost of transportation from the plantation to Nashville, or other place of shipment, he would find that that alone was far more than the labour he obtained in return, and that he had in fact given the cotton itself away, receiving for it no equivalent whatever.

Had the whole 156,000,000 been converted at home into cloth, it would have amounted to about seven pounds additional, per head, for the people of the Union, and it would then have been consumed at home, for the consumption of the South would then have risen to a level with the present consumption of the North, and the latter would have largely increased, because of the great demand for labour that would have existed. Had that been done, the price of the whole crop would have been 8*d.* instead of 4½*d.*, and the planter would have received seven cents per pound, *additional*, on 900,000,000 of pounds, or *sixty-three millions of dollars*—and that, large a sum as it is, is but a part of the benefit that would have resulted from such a course of operation.

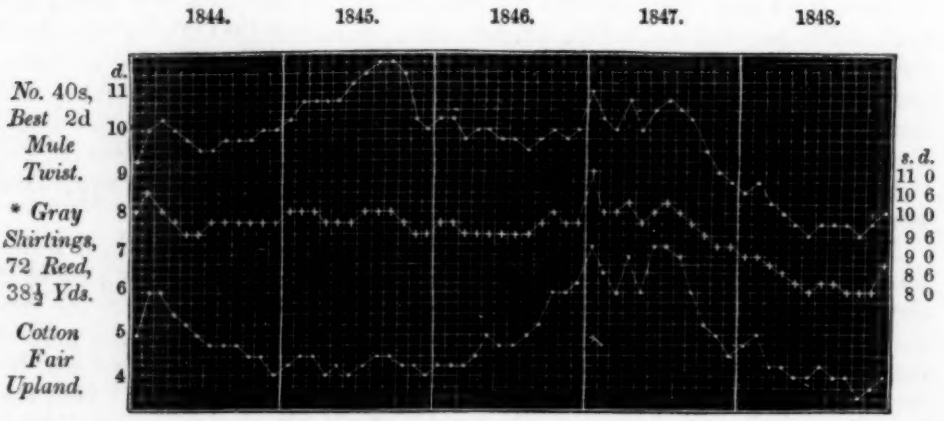
It will be said that high prices would arrest consumption. If so, how important it is to the producer to cut off the enormous charges of the host of persons that now intervene between himself and those who desire to consume his products. High prices, consequent upon the maintenance of the existing system, do arrest it, because they are a tax upon both producer and consumer. Such prices realized by the former, consequent upon an increased facility of exchanging with the latter, would produce a contrary effect. They would increase it; for we should obtain more from all the world for what we had to sell, and our own consumption would increase more rapidly. The increasing emigration to this country would raise the value of man abroad, and those whom we now see expelling him from their lands, burning his house that he may not return, would then find themselves compelled to offer him inducements to remain. Agriculture would then improve and wages would rise, and the power to consume cotton, on both sides of the Atlantic, would grow, to the infinite advantage of the planter. With the increased demand, he would at length find something like certainty in place of the present gambling system under which he is so often nearly ruined. How little certainty he now can have, will be seen by the following diagrams, which I take from the circular of Messrs. Rathbone, Brothers, & Co., before referred to.

Fluctuations in the price of Cotton, in 1848.



* Fair Orleans. † Middling. ‡ Ordinary.

The following shows the variations, from 1844 to 1848, in the prices of cotton, twist, and cloth.



The highest and lowest lines show the comparative prices of yarn and cotton, the quotations being per. lb. on the left of the tables. The middle line shows the fluctuations of a cotton long cloth, the quotations being per piece, on the right of the tables.

Here we see the price of cotton lowest when cloth is at the highest; and the manufacturers realizing fortunes, while the planter is being ruined. Such are the inevitable results of a system that forces almost all the cotton of the world into a market in which there is but a given amount to be exchanged against it, and in which the price of each pound is dependent entirely upon the relation which the whole mass bears to the constantly diminishing sum that can be spared to pay for it. It is a constantly shrinking Procrustean bed. While thus destroying the planter, and lessening his power to provide for his people, there is an unceasing abuse of him as an owner of slaves, and an unceasing threat to substitute the *free* labour of the wretched Hindoo for that of the well-fed, well-clothed, and well-housed labourer of the South, and the lower the price of cotton, the stronger is the determination to keep it low. Railroads are to be made in India, that cotton may come to market cheap, and cotton cloth go more freely to that country; and yet with every step of increase in the export of cotton goods, the poor Hindoo becomes more and more enslaved, and more and more the victim of famine and pestilence.

The difference between twelve cents and eight cents per pound for cotton is, on an average, about one cent a yard. The consumption of Great Britain and Ireland is about fifteen yards per head, while the average of that of her colonies is about three. It is absurd to suppose that this difference could make any essential difference in the consumption of an article of the first importance, under natural circumstances; but if it could, how immense would be the difference in our home consumption that would result from the adoption of a system that would enable the farmers of Tennessee and Ohio to exchange produce with the planter—food for cotton—giving acre for acre, instead of, as now, bushels for pounds—the difference being swallowed up in the transit of the food and the cotton to and from Liverpool and Manchester.

The harmony of interests, throughout every part of the Union, is perfect, and all that is needed is, that all should understand it. What injures the farmer injures the planter; and *vice versa*, the planter cannot suffer without injury to the farmer. Throughout the South, planters are abandoning cotton and substituting wheat, and that at a moment when the European market

for food is to be closed against the hundreds of millions for which, *as it is asserted*, we now need a market.

As some may doubt the existence of this harmony, I propose now to show how the present course of action, as relates to food, tends to destroy the market for cotton.

The people of Germany and Russia, after feeding themselves, have food to sell. With the produce of that food they desire to buy cloth. The higher the price of the food they sell, the more cloth they can buy. The great food market, at present, is England. If we fill that market, the price of food will be low, and the German can buy little cotton. If we do not, it may be high, and he may buy much cotton. We are now converting labourers, miners, and mechanics into farmers, diminishing the consumers and increasing the producers. The more consumers we have, the less food we shall have to spare, the higher will be the price of food in England, and the greater will be the quantity of cotton that can be purchased by the German and the Russian. The more producers we have, the more food we shall have to sell, the lower will be its price, and the smaller will be the quantity of cotton that can be produced by the German and the Russian. All this seems to me so obviously true, that it needs only to be stated. It has been seen that the price of food is here maintained by a home demand resulting from the great immigration now taking place, and we know that if by causing a demand for labour for the building of furnaces and mills, and other similar works, we could cause the immigration to go next year to half a million, there would be a further demand for grain, that would carry prices to a point still higher. Let us now suppose the immigration of next year to be 600,000, producing a further increase of demand for food to the extent of twenty or thirty millions of dollars, and see what would be the effect upon the planter. The Canadian would find a market for his grain within the Union, for the price would be sufficiently high to enable him to pay the duty. The value of agricultural labour everywhere would rise with the increasing price of food; and every farmer, at home and abroad, would consume more cloth, because he could sell the products of his labour higher, *i. e.* he could obtain more cloth and iron for it. The German, the Russian, the Irishman and the Englishman would be larger customers than now, while the home demand would absorb enormous quantities that would otherwise go to England to augment "the stock on hand," by the size of which is measured the price to be paid for the ensuing crop.

Our present policy tends to destroy the home market and the foreign market too. It diminishes the productiveness of labour on both sides of the Atlantic, and all that is taken from the surplus that remains after feeding the labourer, is so much taken from the fund that would otherwise go to the purchase of cloth or iron.

THE TOBACCO PLANTER.

A brief examination of the tobacco trade will show precisely similar results. In 1822, we exported 83,000 hogsheads, and the price was $74 82, yielding about $6,200,000. In 1845, we exported 147,000 hogsheads, and the price was $50, yielding $7,350,000. Deducting the extra expense of transportation to the place of shipment, the producers received less for the large quantity than they had done for the small one. From 1830 to 1835, the export averaged 90,000, and the amount was $6,200,000, yielding to the producer, on his plantation, as much as the larger quantity in 1845. The sum of $6,200,000, at these two periods, would have brought in Liverpool:—

1830 to 1835,	pieces of cloth,	3,300,000,	or tons of iron,	200,000
1845,	"	"	3,900,000	"	130,000

The planter is giving almost two-thirds more of tobacco for twenty per cent. more cloth, although his brother planter is almost ruined by the low price of cotton; but in the case of iron it is worse, for he gives two-thirds *more* for thirty-five per cent. *less*. In the first period, he could have two and one-fifth tons for a hogshead; whereas in the last he has little more than one-third of the quantity, or seven-eighths of a ton. It is obvious that he is being taxed by somebody, that he is giving more and receiving less, and that the cause of this is, that the productive power enabling the people outside of the Union to pay for tobacco, does not keep pace with the power of those inside of the Union to produce it. What is his remedy? It is to increase the number of people inside of the Union, with whom he can have perfect freedom of trade. The Englishman will consume six pounds for one that he can now consume, burdened as it is with a tax of 3*s*. per pound; the German will do the same; and so will the Frenchman, when he can free himself from the tax imposed upon him by the government monopoly. The more men that are imported, the more will be transferred from the list of small customers to that of large ones, and the less will be the cost of transportation from the place of production in Maryland or Virginia, Ohio or Kentucky, to the place of consumption, Philadelphia or New York, Berlin or Vienna; for the larger the bulk and value of the commodities transported west, the lower will be the charge for transportation eastward. Between the interests of the tobacco planter, the manufacturer, and the ship-owner, there is therefore perfect harmony.

THE SUGAR PLANTER.

The sugar trade presents the same state of things. The agriculturists of the world are giving a constantly increasing quantity of labour as the equivalent of a constantly diminishing one. The following exhibit of the movement of the great sugar market, since the commencement of the present century, shows that the amount paid for sugar has been constantly diminishing, while the price of the English commodities given in exchange has varied in a degree so much less that whereas in 1801 the consumption of $14\frac{2}{10}$ persons paid for a ton of iron, that of 24 was required in 1831, and the proportion has been steadily increasing. The whole sum paid in 1847 for this important article of food, by *twenty-nine millions* of people, was less than was paid in 1801 by sixteen millions, and the contribution per head was less than one-half, and yet the difference in the price of iron was, by comparison, trifling.*

* The case is the same in regard to all other of the products of the land. In 1841 and 1842, the colonial timber received in Great Britain averaged 931,000 loads. In 1846 and 1847, the average was 1,150,000 loads. In 1848, 1,102,000 loads. The price, mean while, had, however, fallen almost ten per cent.,† and the colonist, after paying the extra freight, must have received less, in money, for the large than for the small quantity, while the price of iron had advanced fifty per cent. His timber would therefore yield him about forty per cent. less weight of iron to be employed in the further production of timber. The writer from whom I quote gives many other facts to show that the increased supplies have been obtained at "the same cost of labour," or that means have been found "for making our [their] own industry more productive."‡ It does not matter which, but of the two conditions he "prefers the former." The former *is* the one, and being such it is scarcely to be wondered that the poor and over-taxed colonists desire annexation.

† Edinburgh Review, July, 1849. ‡ Ibid.

	Population.	Quantity retained for consumption.—cwts.	Price per cwt.	Total value consumed.	Price per head.	Price of iron.	Number of persons fed with sugar in exchange for a ton of iron.
1801	16,338,000	3,639,000*	45/†	£8,188,000	10/2	£7 5‡	14·2
1811	18,500,000	3,818,000*	41/6†	£7,888,000	8/6	£8‡	18·8
1821	21,200,000	3,529,000*	34/†	£6,000,000	5/8	£6 10‡	23
1831	24,029,000	4,233,000	23/8†	£5,000,000	4/2	£5‡	24

I do not extend this table, for Mr. Tooke's list of prices does not come down to the end of the next decennial period, and I have no other that appears to correspond with it. Enough, however, is given to show that the people of the United Kingdom were steadily giving less iron for more sugar. In 1801 the planter could have 1,100,000 tons as the equivalent of 180,000 tons; but in 1831 he could have but a million of tons as the equivalent of 210,000. From that time to the present there has been an unceasing effort to cheapen sugar, and yet there were taken for consumption (including the large quantity exported after being refined) in the years 1845 to 1847, only 15,900,000 cwts., or an average of 5,300,000, being only 45 per cent. more than in 1801, while the population had increased 90 per cent. It is obvious that the power of consumption diminishes, and yet the prices of the world are fixed in England. The consequence of this is seen in the fact that 5,800,000 tons, in 1847, would command but £7,200,000, while 3,600,000 in 1801 would command about £8,200,000.

The return to labour employed in the cultivation of cotton has fallen so low that the Carolinian tries wheat, and the Mississippian sugar. Sugar falls so low that the West Indian turns his attention to coffee. By the time his trees have become productive, the price has so far fallen that he cuts them down, and then the price rises, while that of sugar falls.§ Thus is it ever and everywhere. The producers are over-ridden by the exchangers, and so must they continue to be while they shall continue to have the price of their whole crops determined by that which can be obtained for a small surplus in the constantly diminishing market of England.

The production of sugar does not vary greatly from a million of tons, and the yield to the planter may be about $70, the whole amount being about $70,000,000. Taking the cotton crop at $80,000,000, we have the sum of $150,000,000 as the value of the labour of that large portion of the population of the world employed in producing these two articles, so essential to the comfort of the rest of the world. The equivalent of this sum in 1845 and 1846 might have been (delivered on the plantation) about 2,500,000 tons of iron, the article that, of all others, is most essential to the maintenance, or the increase, of the productive power.

A ton of bar iron is not the equivalent of twenty-five days' labour, properly employed among the coal and iron fields of the Union, but even at that rate, one man would give more than twelve tons per annum. To produce the whole quantity required to pay for the cotton and sugar crops of the world would require, then, the labour of 200,000 men. Is it not obvious that the agriculturists of the world are taxed to a vast amount for the support

* Porter's Progress of the Nation, Vol. III. page 32.

† Tooke's History of Prices, Vol. II. page 413. Mr. Tooke gives the various prices of the year. I have taken what appears to me to be the average.

‡ Ibid. p. 406.

§ From this cause it is that coffee is now scarce and high, and sugar abundant and cheap, the price of the latter in London being but about 24*s*. How much is left for the poor producer that has paid freight from Benares, far up the Ganges, and all the charges of all the persons through whose hands it has passed, may readily be imagined. Twenty pounds of sugar must be required to pay for one of cotton, in the form of coarse cloth.

of the fleets and armies, the merchants and brokers, the paupers and the noblemen of Great Britain, and is it not incumbent upon them to free themselves from such a state of vassalage? To *add* to the present annual production of the Union in the next seven years, *the whole quantity* of iron required to pay for the cotton and sugar crops of the world would require not the slightest effort, and so far would it be from diminishing the supply of food, or cotton, that the production of both would increase at a rate more rapid than was ever before known, for the farmer and the planter would thus obtain a market on the land for the products of the land, and good roads to go to distant markets, and the chief part of the time and labour now wasted in the work of transportation might be given to the work of cultivation. We should then import hundreds of thousands of men to make roads through the States already organized, instead of exporting hundreds of thousands to California, and then squandering our resources in the premature effort to make a road by which to communicate with them.

It is time for the cotton planter to look this question fully in the face. Had he a market, he could in a brief period increase the crop to 5,000,000 of bales. Having no market, he is compelled to limit the cultivation, and thus it is that the product of such a region as South Alabama does not increase. In 1839 it yielded, bales, ... 551,000

From 1845 to the present time the average has been only 440,000*

The people who should be raising cotton, or making iron, are perpetually on the move, producing nothing. The picture presented in the following paragraph, taken from one of the papers of the day, is the one that meets our eyes look where we may:—

"The tide of emigration continues to pour through our city southward and westward with increasing volume. The rush is tremendous. Throughout the day, from early dawn until late at night, long trains of wagons, families, and forces are seen moving through our streets. Both our ferries are kept in continual operation. Mr. Fairhurst, one of the proprietors of the lower ferry, has kept a memorandum of the movers crossing at that point during the last two weeks. In that time *three hundred and fifteen wagons* have crossed the river, of which number 214 were bound for Texas, 89 for the southern counties of our own State, and 12 for Louisiana. It is estimated that, counting whites and blacks, there are about five persons to each wagon. This would show that within the last fourteen days about fifteen hundred movers have passed this one ferry. We have no record of the number crossing at the upper ferry, but if it is as large as the lower, the number of movers passing through our city during the present month will be about *six thousand!*" —*Little Rock (Arkansas) Democrat, Nov.* 16.

Those men are flying from the rich and unoccupied soils of lower Carolina and South Alabama to the high lands of Arkansas and Texas, thus increasing their necessity for transportation, and diminishing their power to obtain it. Let them fly as they may, they cannot fly so fast as to prevent the increase of the cotton crop, the average of which must soon stand at 3,000,000 of bales; but where then shall the planter find a market? Among the sugar planters of the world? Like himself, they are ruined for want of a market. Among the coffee growers? Like himself, they are ruined for want of a market. Among the wheat growers? The Russian wastes his crop for want of a market, and the American is competing with him for the possession of that of England, while the Englishman is ruined by competition with both.† Is it among the operatives of England? They are

* De Bow's Commercial Review, Vol. VII. page 446.

†The following passage from one of the journals of the day, presents a tolerably correct view of the course of things in Great Britain. The producers are being ruined, and all are becoming consumers, and thus it is that Ireland, exclusively agricultural, furnishes a market for food. It is forgotten, however, that every diminution in the amount of pro-

endeavouring to underwork the Hindoo, and their power to purchase cotton or sugar diminishes daily. They need a market for their labour. Is it in France? France is always at war, and produces little. Her consumption of American cotton in 1842 and 1843 was 717,000 bales. In 1846 and 1847, only 575,000.*

Look where he may, he must see that the producers of the world want markets, and that for want of them they are becoming poorer instead of richer, and that their power to obtain even the machinery of production is daily diminishing, the price of iron in sugar, coffee, cotton, wheat, indigo, or any other of the products of the earth, tending steadily upward, and yet there is no single commodity in the world that would tend to fall so steadily, but for the existence of *the monopoly system*. The supply might be increased to an indefinite amount, and with a rapidity far exceeding that of any other of the products of the earth. Make a market for it requiring annually 10,000,000 of tons, and this country could supply it in ten years. Double or treble it, and we could supply the whole in reasonable time, for our capacity is without limit, and we could command the services of half the labourers of Europe. Here it is, *and here alone*, that the planter can look for a market capable of expanding itself in the ratio of the increase in his power to furnish supplies. Here, and here alone, can the market for coffee, silk, indigo, and all other of the products of the world be so far enlarged as to enable the coffee planter, and the cultivator of silk and indigo to quadruple their consumption of cotton.

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duction diminishes the amount of commodities that can be given as the equivalent of the products of others, and that those who buy food have little to give for clothing, and must go in rags:—

"The prospect of an Irish demand for corn is improving, and also that the dependence of England, on foreign supplies, will gradually increase. The land monopoly of England, by adding the item of rent to be paid by the occupier and producer, made requisite a tax on the foreign article, which should protect him against the proprietary producers abroad, who had no rent to pay. The removal of this tax has now thrown directly upon the English farmer the whole burden of his rent, which was before borne by all consumers of bread. This burden will be enhanced, by the abrogation of the navigation laws, which, by diminishing freights, will make the competition between the cheap rentless lands of other countries, and the landlord-burdened soil of England, more severe, and, as a consequence, much of the poorer soils will be abandoned, while the expensive system of culture before resorted to, to increase the quantity of protected corn, must be relinquished as unprofitable. A considerable diminution in the product of a *good* English harvest, as compared with former years, may then freely be looked for. We have given above an official table of the quantity of food taken for consumption in England, for the year ending August, 1849. That was in aid of the harvest of 1848, which was "good," but the acreable product, from causes alluded, could not have been as large as usual. The result of this is, that the small farmers, with small crops at low prices, cannot meet tithes, taxes, poor rates, and rent, the last the most onerous; and their capital and numbers are annually diminishing, swelling the numbers of bread-consumers in other employments."

* Merchants' Magazine, Vol. XVII. page 562.

THE WOOLS OF VARIOUS STATES AND COUNTRIES COMPARED.

We trust not a word is needed from us to remind our readers, and especially those who were, or may be, interested in the improvement and extension of wool husbandry in the United States, how fortunate it is, that a gentleman of science, with the necessary leisure and appliances, such as are possessed by Mr. Browne, should have turned his attention to the philosophy of the subject.

Hitherto the qualities of wool have been too much a matter of loose comparison and conjecture, without any certain test. The mathematical precision with which its fineness is ascertained by Mr. Browne, leaves no room for cavil, while it has established for our country, incontrovertibly, the capacity to produce this great staple of national industry and wealth, of a quality equal to the best in the world. It is another proof, too, how much *science*, and how little the *government*, is ready to do for Agriculture.

Had any one taken half the pains in discovering new and more efficient means of destroying the human race, that Mr. Browne has, in his illustrations of the nature and growth of wool, and the means of improving it, governments would publish his discoveries, and pay him, and honor him, as they do inventors of revolvers and rockets, and authors of military memoirs and maps. Millions for the art of war, and for military reconnoissances, and roads, and pensions, but not a dollar for peaceful arts, and useful discoveries, unless it be a miserable patent certificate that costs the government not a dollar, and that if the invention be worth anything, is sure to be pirated. *So we go!* Ah, we are a wise! a wonderful people!

When Mr. Browne wrote to the Hon. Mr. Reed, he had not received the specimens from Mr. Cockrill. He since, however, wrote a note to the editor of "The Plough, the Loom, and the Anvil," to apprise him of it. In the meantime, the communication from Mr. Cockrill himself had been received and is appended, to justify the confidence with which he had asserted that the United States is a better sheep and wool country than Silesia or any other *high latitude*, and that as good bucks can be purchased in the United States for $50, as those in Germany which cost $1500 or $2000; offering to show from his own flock in latitude 30 degrees, against all Silesia above 51 degrees north, as he believes that no sheep in a frozen region, and housed so much, can be brought to the perfection that sheep can in Tennessee, if properly bred and managed. There is no doubt with us that the true sheep pastures of the Union lie south of the Delaware. But to show how this vast advantage is appreciated by *Maryland legislators*, we will in our next publish the memorial from farmers of that State to the last Assembly, together with the *names of the committee*, to whom it was referred, and who, from timidity or indolence, did not, we believe, even make a report of any kind!

Philadelphia, Mareh 1, 1850.

To the Hon. Rob't R. Reed.

Dear Sir—In your favour of the 27th of October last (inclosing me, for examination, some specimens of wools, for which I beg leave, if not too late, to return you my thanks), you are pleased to say that "you would be happy to have the result of my observations, as my critical examinations will go far with you in settling the disputed question, whether we *can* produce as fine wool as Saxony?" Various unlooked for circumstances, among which was sickness in my family, have prevented me from complying before with your request.

In order to appreciate the importance of the investigations, which I am making, into the nature and properties of hair and wool, I ask permission to refer you to a work recently published by Mr. J. S. Skinner, the indefatigable editor of "The Plough, the

Loom, and the Anvil," entitled, "Sheep Husbandry in the South," by Col. Henry S. Randall, of New York. This latter gentleman, by a series of proofs, shows:—

1st. That wool growing is never likely, permanently and importantly, to increase in any country of Europe, unless it be Hungary, Turkey, and the south of Russia.

2d. That it is more likely to decrease than increase in Great Britain, France, Portugal, and Italy.

3d. That such a decrease is next to certain in Spain and Germany (including Prussia and Austria in the latter), except Hungary and Transylvania; that the decrease will be much more considerable in Germany; that its rapidity and extent will be proportioned to the rapidity and extent with which the market is supplied from countries which can grow wool cheaper, such as North and South America, Hungary, Southern Russia, and Australia.

4th. That wool growing will, undoubtedly, largely increase in Hungary and Southern Russia, and that it *ought to*, in European and Asiatic Turkey, but *will not extensively, until the character of the people and their political institutions are changed.*

5th. That it will also increase at the Cape of Good Hope, Australia, and Van Dieman's land; but that its economical extension in either of these countries is limited, especially if America becomes a competitor.

6th. That no part of the eastern continent or its islands (all things considered), possesses equal advantages for wool growing with some parts of the United States.

I will now proceed with a schedule of the diameters of sundry wools, beginning with the coarse and proceeding to the finest known filaments, in parts of inches.

	Of an inch.
No. 1. I have, in my collection, a specimen of what is called the fleece of the Egyptian sheep; it bears but little resemblance to that integument, and has for its greatest diameter 120, and for its least	281
" 2. Mr. Youatt says that the wool of the sheep of Walachia, in European Turkey, measures	375
" 3. The wool of Lincoln, England (Youatt),	480
" 4. Common American wool from Messrs. Bullock & Davis,	500
" 5. The wool of Leicester, England (Youatt),	500
" 6. The wool of Wiltshire, England (Youatt),	500
" 7. The Cheviot wool, England (Youatt),	500
" 8. The Irish long wool (Youatt),	560
" 9. The wool of Norfolk, England (Youatt),	580
" 10. The Cottswold, England, not given.	
" 11. The American Cottswold; specimen from Mr. Clements, of Philadelphia,	625
" 12 Common American black wool; specimen from Messrs. Bullock & Davis,	625
" 13. Wool of an American Leicester yearling buck; specimen from Mr. Clements,	625
" 14. English South Down (Youatt),	600
" 15. Another American Leicester; specimen from Mr. Clements,	703
" 16. Wool of Van Dieman's land (Youatt),	750
" 17. Wool of Odessa (Youatt),	750
" 18. Wool of Ryeland, Herefordshire, England (Youatt),	750
" 19. Wool of Australia (Youatt),	750
" 20. English Merino, Lord Weston's pick lock (Youatt),	750
" 21. Mexican wool in my collection; specimen from Messrs. Bullock & Davis,	781
" 22. Wool from Buenos Ayres; specimen in my collection from Messrs. Bullock & Davis,	781
" 23. English Saxony wool (Youatt),	840
" 24. American Cottswold or New Oxfordshire; six specimens in my collection, presented by Mr. Raybold, of Delaware State,	625, 703, and 859
" 25. American South Down; specimen in my collection from Mr. Clements,	859
" 26. Another of the same,	937
" 27. Wool of an American merino ram, three years old, first shearing (length eight inches),	937
" 28. Another variety American Leicester, specimen in my collection, from Bullock & Davis,	937
" 29. Deccan (East India) wool (Youatt),	1000
" 30. Full-blood Saxony wool, from Saxony; specimen in my collection from Bullock & Davis,	1041
" 31. Three-quarter American Saxony; specimen, in my collection, from Bullock & Davis,	1041
" 32. Wool from the buck of the herd of Dambrau, of Saxon Electoral origin, but highly improved by bucks of Prince Lichnowsky; specimen in my	

Of an inch.

collection, collected by Charles L. Fleischmann, Esq., for the U. S. Patent office, in 1845–6, ... 1093

" 33. Wool from a buck of Mr. Thaer at Moeyelin near Berlin; specimen, in my collection, collected by Mr. Fleischmann, ... 1093

" 34. Wool from a nine month old ram; lamb from the flock of the Duke of Leitchenan, in the possession of the Hon. Robt. R. Reed, of Pennsylvania, 1093

" 35. American South Down wool from "Privena," exhibited in Albany, N. York; specimen in my collection from Mr. Clements, ... 1093

" 36. American full-blood Saxony, black wool; specimen, in my collection, from Bullock & Davis, ... 1171

" 37. Wool from buck "Napoleon," valued at $1500, owned by M. Heller, of Chrzelitz, whose flock is considered the only rival to those of Prince Lichnowsky's; specimen, in my collection, collected by Mr. Fleischmann, 1200

" 38. Wool from a buck of the herd of Reti, Hungary; specimen, in my collection, collected by Mr. Fleischmann, ... 1200

" 39. Washed wool from a ewe of the stock breed of Prince Lichnowsky, at Kuchelna; specimen, in my cabinet, collected by Mr. Fleischmann, . 1250

" 40. Unwashed wool from a buck of Roggon, in Mecklenberg; specimen, in my collection, collected by Mr. Fleischmann, ... 1250

" 41. Wool from a buck of Mr. John D. Patterson, of New York; specimen, in my collection, from Mr. J. S. Skinner, ... 1250

" 42. Wool from a ewe, the dam of the ram of the Hon. Robert R. Reed, in the possession of Mr. J. G. Strean, of Pennsylvania; specimen, in my collection, from Mr. Reed, ... 1250

" 43. Washed wool from the flock of Mr. Strean, of Pennsylvania; specimen, in my collection, from the Hon. R. R. Reed, ... 1250

" 44. Wool from the flock of Mr. Mark Cockrill, of Tennessee; specimen, in my collection, from Mr. J. S. Skinner, ... 1250

" 45. Unwashed wool from a ewe of Prince Lichnowsky's stock breed at Kuchelna; specimen, in my collection, obtained by Mr. Fleischmann, . 1562

" 46. Wool from a buck of a herd near Moscow, Russia; specimen, in my collection, obtained by Mr. Fleischmann, ... 1572

" 47. Wool from a buck of Prince Esterhazy, in Hungary; specimen, in my collection, obtained by Mr. Fleischmann, ... 1572

" 48. Washed wool of a ewe of Chrzelitz, ... 1572

" 49. Pennsylvania wool, No. 1, and No. 2; specimens in my collection from Messrs. Howston & Robinson, of Philadelphia, ... 1572

" 50. Wool from a ewe of the herd of Guettmannsdorf, celebrated for its thorough blood and fine large sheep; specimen, in my collection, obtained by Mr. Fleischmann, ... 1580

" 51. Wool from a buck of the herd of the Viceroy of Hungary, at Altsuth; specimen, in my collection, obtained by Mr. Fleischmann, . . 1600

" 52. Wool from a buck of the herd of Pishkowitz, owned by Baron Zedlitz; specimen, in my collection, procured by Mr. Fleischmann, . . 1600

" 53. Full-blood American Saxon, and half blood American Saxon; specimens in our collection, presented by Messrs. Bullock & Davis, and believed to be from Washington Co., Pennsylvania, ... 1833

" 54. Wool from a buck of a flock of Gross Herlitz, Silesia; specimen, in my collection, obtained by Mr. Fleischmann, ... 1875

" 55. Wool from a buck of the herd of Count Caroli, Hungary; specimen, in my collection, obtained by Mr. Fleischmann, ... 1875

" 56. Wool from another sheep of Mr. Thaer; specimen, in my collection, obtained by Mr. Fleischmann, ... 1875

" 57. Wool from a ewe of Col. Randall, N. York; specimen, in my collection, sent by himself, ... 1875

" 58. Wool from five ewes of Mr. S. Patterson, of Pennsylvania; five specimens, in my collection, from Mr. J. S. Skinner, from . . 1250 to 1875

" 59. Wool from a buck of Col. Lee's flock, Pennsylvania; specimen, in my collection, presented by the Hon. R. R. Reed, ... 1875

" 60. Wool from the flock of Mr. Robert Allen, of Bedford County, Virginia; five specimens, in my collection, from Col. B. B. Long, of Philadelphia, 1250 to 1875

" 61. Wool obtained by Mr. Fleischmann, from a wool merchant at Dresden, as a sample of Electoral wool, from Saxony; specimen, in my collection, . 2186

" 62. Wool from five bucks of Mr. S. Patterson, of Washington Co., Pennsylvania; specimens, in my collection, from Mr. J. S. Skinner,. 1250–1572–1875 to 2186

Of an inch.

To these I will add for the purpose of comparison:—

"63. Wool of the Arabian camel; specimen, in my collection, from Mr. David Samuels, of Philadelphia, ... 2500

"64. Wool from the Vicunia of South America; specimens, in my collection, presented by the same, ... 2500

Having accompanied me in the foregoing enumeration, you will be pleased to assist in arriving at the following necessary conclusions:—

1st. England cannot raise *fine* wool, and as her manufactures of superfine goods require an immense amount of it, they must, to that extent, be dependent upon foreign countries. The common country wools of England, as has been above shown, are, comparatively, *very coarse;* for example, that of Lincoln being only 480; the Leicester, Wiltshire, and Cheviot are only 500; the Irish long wool only 560, and the Norfolk, 580. On the other hand, common American wool ranges from 500 to 625.

2d. The wool of the English breeds of sheep increases in fineness in the United States, without the aid of any crossing; for example, the Leicester, which, in England, is 500, in the United States, increases to 625, 703, and 937. The South Down, which, in England, is 660, increases in the United States to 859 and 937.

3d. Foreign (continental) sheep introduced into the United States increases in fineness, but in England such breeds decrease; for example, the Merino, Lord Weston's English Merino picklock is only 750, but in the United States it has been known of more than double that fineness. Wherefore, the United States will be enabled to furnish England with the *fine* wools she cannot raise.

4th. The United States can raise finer wool than they can in Walachia, Mexico, Buenos Ayres, Deccan (East Indies), Van Dieman's Land, Odessa or Australia—the finest wool in these places not exceeding 1000, which (at least in one instance) has been doubled in the United States.

5th. We have now arrived at the most interesting portion of this comparison, viz., that of the finest wools of the United States, with those of Russia, Mecklenberg, Prussia near Berlin, Prussian Silesia, Saxony and Hungary, being those foreign countries which have the reputation of raising the finest wool in the world.

The finest of the foregoing specimens from Russia, have a diameter of	1572
Of Mecklenberg, ...	1250
Of Prussia near Berlin, ...	1875
Of Prussian Silesia, ...	1875
Of Saxony, ...	2186
Of Hungary, ...	1875

Now look upon this. In New York, Pennsylvania, and Virginia, we have produced wool of 1875, and in Pennsylvania, of 2186. SO THAT THE UNITED STATES, IN RESPECT TO RAISING FINE WOOL, IS NOT BEHIND THE MOST FAVOURED COUNTRY IN THE WORLD.

The sheep, like the sheep's master, improves in this free and happy country.

It is true that, in order to institute a comparison of extreme fineness of filaments, I have quoted the wool of the Arabian camel, and that of the South American Vicunia, at 2500; but it must be recollected that the Vicunia of South America, although commonly called "a sheep," belongs to the genus camel; however, therefore, this great fineness of fibre may act as an inducement to introduce this animal into the United States, the comparison of his wool is no more disparagement to the American fleece than to those of Prussia, Hungary, and Saxony, which it excels in an equal degree.

I have then answered the "disputed question" referred to in your letter. WE CAN PRODUCE AS FINE WOOL AS SAXONY. And I hope you will henceforth agree with Col. Randall, in his sixth proposition above quoted. But while I agree with that gentleman that "no part of the eastern continent, or its islands (all things considered), possesses equal advantages for wool growing with some parts of the United States," I respectfully differ with him in the propriety of *crossing stocks* OF DIFFERENT SPECIES, of this most useful animal.

If we are to become one of the greatest wool growing countries in the world, we must found A PERMANENT RACE, POSSESSING THE GOOD QUALITIES OF BOTH PARENTS, and not a continuous production of hybrids, which will be the inevitable consequence of following Col. Randall's advice. We are about to enter upon a great politico-economical race with all nations, and what I desire to see is *a fair start*. One radical error in the commencement may destroy years of toil and end in labour unrewarded. I offer to show my fellow-citizens that there are distinct species of sheep which ought never to be amalgamated. I am, with high respect, your obedient servant,

P. A. BROWNE.

TENNESSEE WOOL.

Nashville, April 11, 1850.

FRIEND SKINNER.

DEAR SIR—I enclose you a letter from Professor Browne, of Philadelphia. Will you please let it have a place in your valuable paper, "The Plough, Loom, and Anvil." The samples of wool I sent you did not properly represent my flock of sheep. I desire the wool men of America not to be prejudiced against the South as a wool-producing country, but, on the contrary, believe, myself, that the low latitudes have many and great advantages over the North, such as will not allow the North to stand the competition, if the business will only be properly commenced in the Southern States.

Yours, respectfully,

MARK R. COCKRILL.

Philadelphia, April 2, 1850.

To MARK R. COCKRILL, ESQ.

DEAR SIR—I have been sick ever since the receipt of your letter;—this is the first day I have been able to resume my studies.

The five specimens of wool sent for examination are as follows:—

No. 1, marked "best that could be had in Germany," has a diameter of the 1.1875th part of an inch. This is very fine, but I have finer specimens, both Saxony and American.

No. 2, marked "Ewe, four years old, ten months growth, my flock." This has a diameter of 1.2186th part of an inch, but the filaments are not uniform; there are some strands that are not thicker than the 1.2500th of an inch, but they are irregular and not well-formed.

No. 3, marked "Ewe, two years old, ten months growth, my flock." This has a diameter of 1.1572th part of an inch, and is rather knotty.

No. 4, marked "Ewe, three years old, ten months growth, my flock." This is a beautiful wool, even, and with a diameter of 1.1875th part of an inch.

No. 5, marked "Ewe lamb, eleven months old, my flock." This also is a clean, even fibre, and is of the extreme fineness of the 1.2186th of an inch.

I am your obedient servant,

P. A. BROWNE.

ON THE NATURE AND GROWTH OF WOOL, AND THE INFLUENCE OF THE DIFFERENT SALVES IN PROMOTING ITS GROWTH.

I.—By ROBERT M'TURK, Esq., of Hastings Hall, Dumfriesshire.

[Gold Medal.]

WOOL is the covering which nature has assigned to the sheep; and while it is to be found on other animals also, in them, however, it is not a distinguishing feature, but forms a finer and warmer covering at the bottom of the longer hair or bristles.

But the description of wool which is the subject of the following observations, is produced exclusively by the different breeds of sheep reared in this country, and which is applied to the various purposes of our manufactures. It furnishes also a suitable protection against the cold and wet, which frequently prevail on those elevated districts, of which the sheep may be regarded as the peculiar occupants. No animal, certainly, has been more bountifully supplied with a covering, neither can the covering of any other animal be rendered available to supply so many of the wants, and promote so many of the conveniences, of civilized life.* Its uses, in this respect, have been more or less known from the earliest period to the present time; and the skill and ingenuity of our artizans are daily extending the list of these uses, by the invention of new fabrics, and by the perfecting of those previously known, and also by the discovery of improved machinery. It does not, indeed, appear to us, that there would be any assignable limits to this progressive improvement, if the endeavours of the breeders of sheep to improve the quality of the fleece were not attended with difficulties, arising from the severity of winter, and the very variable nature of the climate in this country. In most of the attempts hitherto made to improve the fleece, so far as fineness of staple is concerned,

* The wool of the camel, including the Llama, the Alapaca, and the Vicunia, and the wool of some varieties of goats, as the Cashmere, &c., might be rendered as available, and means should be taken to introduce them into the United States.

there has been a decided diminution of the quantity; and the attempts at this description of improvement have often been carried so far, in some flocks, as not only to reduce the weight of the *clip*, but seriously to affect the appearance and value of the flock, being considered too fine, or bare in their coats, for withstanding the storms of winter.

For, as we shall afterwards endeavour to show, if the coat is not sufficiently warm to afford the necessary protection, the constitution of the animal is impaired, and the quality of the fleece deteriorated.

If we examine the fleece of the sheep, we shall find that the staple varies in length and fineness, according to the particular breed of sheep, and the part of the fleece from which it is taken. Upon a more minute examination, with the aid of a microscope of moderate power, it is evident that it consists of filaments, analogous in their nature to horn,* more or less translucid, with a silvery lustre, according to the particular variety of wool. It is also minutely serrated, and the filaments proceed from a series of glands,† which have their seat within the skin of the animal, bearing a striking resemblance to a plant with a bulbous root.‡ It receives a daily addition to its length at the point§ where it is united to the glands, and when it issues from the skin its formation in every respect is complete. The extent of the growth depends entirely upon the improvement in condition which the animal is making at the time; for if it is not receiving a sufficient supply of food, the secretion of horny matter from the gland or bulbous root will be less, and the pile of wool of an inferior quality. The microscope will also show the different periods when the deficiency has occurred,‖ for the wool then produced does not exhibit the same uniform glistening appearance, but at these parts is more opaque, and seems shrivelled and contracted, and is very liable to break, in consequence of which, it is rendered not only of less value, but altogether unfit for combing, and many other valuable purposes.

If this view of the nature and growth of wool is correct, it must, of course, follow, that none of the various salves or external applications can tend, in a direct way, to promote its growth, seeing that the glands which constitute the source from which it grows, receive their whole nourishment from the minute blood-vessels which are everywhere ramified over the inner surface of the skin.

It is a fact known to every grower of wool, that the better the sheep are fed, and the higher they are in condition, the more abundant will be the clip.¶ We also find a further illustration of this truth, in the effect which good feeding has upon the growth of both horn and hoof. These substances, as we have already stated, are of the same nature as the wool, and their growth, like most other animal substances, depend entirely upon the same principles; though they are to the eye, more perceptible, especially in so far as the horn is concerned, in the lighter coloured and more tender portion which is nearest the root; and although the growth of the hoof is less perceptible in this respect, it is equally so in its effects, for we have good reason to believe (from some experiments which we have lately made with regard to the nature of *foot rot*) that the too rapid growth of the hoof which arises from good feeding is one of the most fertile causes of this disease. It has been alleged by some, that the addition to the length of the pile does not take place at the part where it is united to the gland, but that it is pushed out at the top, in the same manner as the growth of the willow takes place.** The truth of this statement may easily be tested by selecting a portion of the wool when growing, and staining it with a solution of the nitrate of silver, at an equal distance from the root and the top, and, in the course of a month, by inspecting the same, when it will be found that the distance between the root and the mark is increased, whilst that between the top and the mark remains the same. This fact requires no illustration to a store-farmer or shepherd. They know well that the white and unstained wool which has grown between smearing and clipping, and which is familiarly known to them as the *rise*, is never found at the top, but always at the root, or at that part which is nearest the skin, and, if measured with accuracy, it will inform us as to the amount of growth from the middle of November, when the salve was applied, till the middle of July, when the wool was clipped. If the animal is of the black-faced breed, and pastured on a farm of medium quality, it

* Wool and horn do not resemble each other under the microscope.—*Edit. P. L. & A.*

† By *glands* we suppose he means the *follicle*, but we never heard it called by that name before.—*Edit. P. L. & A.*

‡ For the knowledge of this fact I am indebted to the courtesy of the person in charge of the magnificent microscope, by Dollond, of London, on the Calton-Hill.

§ The *anterior* extremity is called the *point* or *apex*.—*Edit. P. L. & A.*

‖ This is an error; the microscope makes no such disclosure.—*Edit. P. L. & A.*

¶ This is a good remark, founded in truth.—*Edit. P. L. & A.*

** Wool always increases in length by growing at the posterior extremity.—*Edit. P. L. & A.*

will have gained about two inches; if a yeld-ewe, a little more; and, if a ewe rearing a lamb, a little less. We should be inclined, at first sight, to think that wool of this kind, under the circumstances mentioned, grows at the rate of a quarter of an inch in the course of a month; but, if the growth has been more particularly attended to, it will be observed that an inch, or the half of the whole, has taken place in the last two months, viz., from the middle of May to the middle of July, and that it will progress, at least, at the same rate till December, when the weather becomes more inclement, and the food less abundant.

There is an opinion entertained by many that the application of salve* to the skin has a direct tendency to increase the growth of the wool, in the same manner as top-dressing has to promote the growth of the grasses on the land, where it is applied; and this very erroneous view of its effects is not unfrequently strengthened by the various recommendations of the different salves which we see advertised in almost every newspaper, before the commencement of the salving season.† Now, it can have no such effect; for, if we think but for a moment, we shall see that the finer and more valuable parts of the top-dressing are washed down into the soil by the showers of rain which fall, and then the soluble part is received as food by the spongioles of the roots or mouths of plants, and, with a slight change, it ascends to the leaves in the character of sap, and is there elaborated, and fitted as nourishment for the upholding and increase of the different parts of plants. But it is very different with regard to any substance that is applied to the skin of an animal. In that way, it can never find access to the system, so as to augment any of its products; on the contrary, we are to look for the increased growth of wool to the richness and abundance of the supply of nourishment alone which the animal receives in the ordinary way, and the degree of comfort which, in other respects, it enjoys. Although an application to the skin may stimulate the part, and occasion an increased circulation for a time, it does not follow that this unnatural action will be attended with a corresponding increase of wool, or any other animal formation, to show that the system has derived advantage upon the whole. On the contrary, unnatural excitement of the functions is almost always followed by a corresponding degree of impaired action; and we cannot think that the covering of the skin with salve, or unctuous matter, can have the effect of producing a more healthy action, when it must for a time close the pores of the skin, and, in some degree, obstruct perspiration, without which health cannot be long maintained. But had any of the salves, in reality, a direct influence in promoting the growth of wool, that influence could only be exerted during the time it continued in contact with the skin, and we shall find that this is never more than from ten to fourteen days, as it is by that time removed from the skin to the extent of one-sixteenth or one-eighth of an inch, exactly the amount of the progress which the wool has made in that time, and to which it more particularly adheres. If the salve has been of a hot or burning nature, as is frequently the case with some of the varieties of tar (but more especially with the black thin tar from Stockholm), the scarf-skin is often raised along with it.‡

There is still another and more decided proof that the salves in this respect do not possess the influence ascribed to them; for, if they did, would not the growth be greater during the season when the salves were upon the wool and near the skin, instead of being less then than during any other period of the year; and we have already shown that the growth of wool from the middle of November to the middle of April (five months) is not more, on hill pasture, than one inch, whereas that the seven next months will pro-

* The salves spoken of, so far as they are instrumental in destroying vermin are useful; that they tend to increase the growth of the wool, like top-dressing to soil, is ridiculous. If they are recommended to keep the animal warm and to protect him from dampness, we must say that we would prefer housing and covering; but, if they must be resorted to, why not copy nature, and make the salve resemble, as much as possible, the *yolk*, which is known, by analysis, to be an *ammoniacal soap*. The best ointment, as recommended after the experience of a skilful shepherd, is equal parts of *train oil and tallow*, say forty pounds of the two mixed for one hundred sheep; tobacco, tar, arsenic, &c., are not only useless but mischievous.

† As being little inferior in efficacy to the celebrated Macassar Oil.

‡ We have known sheep frequently die from the influence of tar, particularly if driven and heated immediately after having been smeared. We have also observed that the Cheviots are more liable, in this respect, than the black-faced breed; and even when skinned after death, the *sheds* may be traced over the whole body, where the tar had been applied, by the dark red inflammation which the parts had undergone. Indeed, the application of tar is always accompanied with more or less fever, and the sheep (in the phraseology of the shepherds) deadened or dulled by the tar; and, for this reason, they are always anxious that the stock should be smeared sufficiently early, to have the fever over before the rams are turned out to the ewes.

duce half an inch each, or three and a half inches in the course of that time.* Now, in five of these months, there is no salve upon the wool, and during these, it notwithstanding makes the greatest progress. At the same time, it is true that these are the months in which there is the greatest supply of food on hill pastures. Although we have endeavoured to show that none of the salves afford nourishment to the wool, and thereby promote its growth, still they exert an indirect influence, which has the effect of affording protection to the animal against cold, wet, and the attacks of vermin, and tend in this way most materially to promote its comfort and thriving.† The influence which any salves have then (if not of an injurious nature) must be in proportion to the degree of comfort the animal derives from their application; consequently those which are most adhesive in their nature, and retain their hold of the wool longest, and bind the fibres most together, must evidently afford the greatest protection. But as the quality of the clip is a matter of not less importance with the grower than the quantity, he must not apply any mixture that cannot be removed by scouring, or that will in any way prove injurious to the staple of the wool, or in any other respect unfit it for the purposes to which it is to be applied. Hence, it has been the study of both the growers of wool and compounders of salves, to find out some mixture that possesses these advantages, and the conflicting statements which are daily advanced with regard to the merits of these salves, show the common error into which the growers and compounders generally fall, namely, of endeavouring to discover a salve that would be most answerable for every object and situation. In so far as the destruction of vermin is concerned, this end will be obtained by the application of any of the salves in general use. In so far as the protection of the animal is concerned, against the inclemency of the weather, this will depend on local circumstances, whether the farm lies high, and is much exposed to storms of wind, rain, and snow, or whether it lies low and warm, and is occasionally exempted from those storms which more frequently prevail in the higher and colder districts. It is clear that in the latter description of farms the finer kinds of salves and oils may be advantageously used, as on these situations less protection is necessary, the wool, by their use, being not unfitted for taking the lighter colours. It is not less clear, however, that on farms of the former description, the sheep will stand in need of all the protection which the most adhesive salve can afford; and it cannot be doubted that those compounded of tar and butter or palm oil, possess this property in a higher degree, and are, therefore, better fitted for all high and stormy situations; for, if the animal has not a sufficient protection, as well as a supply of food, its condition will first become stationary, and it will then begin to lose flesh. This is neither more nor less than the more essential or vital parts of the system drawing upon those deposits of fatty matter, which were laid up in store while the animal had a supply of food which not only sustained the system, but enabled it to lay past a store for any deficiency that might afterwards occur. Before any demand, however, is made by the system on these deposits, the organs by which they were secreted have ceased to perform their functions, and the absorbents are the media through which the fat is again restored to the circulation, in order to sustain those organs which are of a more vital nature. When this change in the body occurs, the balance between the deposition and absorption of nutritious matter is reversed, and that supply of secretion that went to the formation of wool, and which was laid up in the glandules of the roots, is exhausted, the formation of the pile is incomplete, and exhibits the shrivelled and contracted appearance which we have already described; and as the withdrawal of this secretion is more or less considerable, the wool is, in proportion, deteriorated in quality and diminished in quantity. But this will, in a great measure, depend upon the condition at the time when the deficiency of nourishment commences. If, in very inferior condition, the whole fleece will come off, and if not so bad, it will only be the finer and more delicate piles that will give way, and particularly on those parts of the body where there is most friction, as, for example, on the neck, the belly, the

* How directly this bears on the question of the comparative advantages of the north and south in our country, for sheep husbandry.—*Ed. P. L. and A.*

† The truth of this fact is well established in an excellent paper by James Menteath, Esq., yr. of Closeburn, in the 49th number of the Quarterly Journal of Agriculture, on the advantages of shed feeding, and also by experiments lately made by Charles Stewart, Esq., of Hillside, and by Mr. James Wilkin, Tinwald Downs, with regard to the relative merits of shed and field feeding, from which experiments it clearly appears, that the lots of sheep fed in sheds by these gentlemen were in higher condition, even with a consumption of nearly one-fourth less turnips; thus showing that the greater degree of comfort which the shed afforded was more than equal to the fourth of turnips, and the higher condition on a less supply of nourishment could arise from no other cause. We are, therefore, thus enabled to form an estimate of the advantage arising from a proper attention to this important subject.

legs, and shoulder; where the wool is coarser, and where there is less friction, it retains the fleece longest. Wool that has not been so far injured as to break in the staple while on the animal, is often so much weakened that the part, where the deficiency occurred, is, upon examination by the wool-stapler, discovered to be unsound, when it has not strength to withstand the trial to which he subjects it, and much loss will, from this cause, ensue in the manufacturing of it. To this cause is also to be attributed the felted or milled state of some fleeces; for, although the deficiency of nourishment has not been so great as to cause the whole wool to give way and peel off, yet many of the finer piles have, and this is always close to the root, where the process of formation was going on at the time that the supplies were withdrawn. The end of the pile thus disengaged immediately gets entangled among the others, and, in consequence of the serræ having their inclination towards the top, the pile must get more and more entangled at every movement of the animal, and the felting of the fleece is thus accomplished. In this case, the stole of wool appears always thinner at clipping time, it being only the stronger piles which are left to be cut. The fact of the pile giving way, under the circumstances which we have stated, has led to the general but very erroneous conclusion that the sheep sheds its fleece every season, as the horse casts its coat, while, in reality, there is no such tendency, except what arises from the causes to which we have already alluded.

In support of this fact, we have sent two specimens of wool, the one taken from a two-year old sheep, and the other from a three-year old, the former *twelve inches and the latter eighteen inches*, neither of which had been previously clipped, but which had received a regular and abundant supply of food.* We can, also, with confidence appeal to any person who will carefully examine the fleece of a sheep that has been well fed during winter, and compare it with one which has been deficient in this respect; and we are convinced that he cannot withhold his testimony to the truth of this observation with regard to the nature of the growth of wool, however much it may be at variance with the general impression, even at the present time.

CORN, COB, AND SHUCK CRUSHER.

Nashville, March 27th, 1850.

Mr. J. S. Skinner, Editor of the Plough, Loom, and Anvil.

Dear Sir—The February number of your most valuable work has at last reached this office, and been handed to subscribers. Mr. H. W. S. of Gallatin, Hinds county, Miss., can be furnished with a corn, cob, and shuck crusher, that will pulverize eight or ten bushels per hour, with two common mules. It is a very simple machine and very easily kept in order. I have been using one for seven years, and during that period, it has never cost me a dime, except for lard or oil for the gudgeons. It was patented by Mr. James Rowe, now of Florida, and can be procured of me for one hundred and sixty dollars. The one I am using cost me three hundred dollars, and I would not take double that sum for it, if I could not procure another. This machine is manufactured in Cincinnati, Ohio; the freight to Vicksburg will be eight or ten dollars; the wood work can be done by any carpenter. If you think this communication will be of service to Mr. H. W. S., or any other person wishing to get a corn, cob, and shuck crusher, you can give it a place in your paper.

Respectfully,

J. SHELBY.

Gov. Hammond, of South Carolina, bought the patent right of one, a Yankee invention, which answered perfectly well, and with great liberality placed it in the way of being introduced to general use. We are sorry to have mislaid a memorandum of the particulars. The desideratum, it will be observed, was a machine to grind up the *shuck* as well as the cob. There are those who believe the shuck to be the most nutritive portion of the fodder of Indian corn.

* Mr. P. A. Browne has, in his collection of wools, a specimen of the first shearing of a three year old American Merino which is eighteen inches long.—*Edit. P. L. & A.*

THE GREAT GRAIN MARKET OF THE WORLD, AND THE CANADA RECIPROCITY BILL.

HAVING sacrificed the iron manufacturers, whose product trebled in little more than four years, furnishing a vast market for the productions of the farm and the plantation—and the coal miners, whose products also trebled in little more than four years, with vast advantage to the farmer and the planter—and having crippled the makers of cotton and woollen cloth—and having thus put a stop to the building of furnaces and rolling mills, to the opening of mines, and diminished by three-fourths the erection of cotton and woollen-mills, under the idea that the "great grain market of the world" was to furnish a better market than that which was being supplied at home, it may not be amiss to call the attention of our readers to the present state of that "great" market, with a view to enable them to calculate what the farmers have *lost* by relinquishing the protection afforded them by the tariff of 1842, and comparing it with what they have *gained*.

Had the tariff of 1842 remained in operation, the domestic product of iron in its various forms, in the past twelve months would have been greater than it has been by at least half a million of tons, worth at an average of $60 per ton,	$30,000,000
The demand for coal, East and West, would have been greater than it has been by at least three million of tons, worth on an average, $3, - - - - -	9,000,000
The demand for cloth would have required the consumption of much larger quantities of cotton and wool, the sale of which would, in its manufactured form, have been greater than that of the quantity actually made by at least - -	15,000,000
The demand for cloth, and iron, and coal, would have required the construction of furnaces and mills, and the opening of mines, requiring a capital of at least - -	15,000,000
	$69,000,000

And great as is this sum, we might with safety almost double it—and then every dollar of it would be found to *represent labour*, which, in its turn, represents only the *produce* of the farm and the plantation consumed in the various forms of food, cloth, house room, which represents lumber, and bricks, and stone, which are themselves but the representatives of food and clothing—and thus might we go on to show, that the farm and the plantation obtain markets to the full extent of the value of all the product of labour applied to the conversion of the raw materials of the earth into the various forms in which they become fitted for the uses of man.

So much has the farmer lost in that form alone; and to this might be added that the same policy has driven hundreds of thousands to seek California, there to eat the grain of Chili, and has so greatly diminished immigration to us from foreign countries, that the home demand for food to supply the wants of those who will arrive this year, instead of *increasing* to the extent of eight or ten millions of dollars, will, to all present appearances, *be less by six or eight millions*—and thus it would be easy to show that the home market for the products of the land of the present year is less than it would have been by, at the lowest calculations, *one hundred millions of dollars*, and probably vastly more, because of the adoption of the policy which looked to the substitution of the distant market for that which was, but a little while since, so rapidly

growing on the land for the products of the land. So much have we lost. What have we gained?

We have now before us an account of the export of wheat, flour, corn, and corn meal, from New York to the "great grain markets" of Europe, in the last six months, and it is as follows:—

	Domestic.	Foreign.
Wheat, bushels, - - -	82,364	138,454
Flour, barrels, - - -	76,068	96,393
Corn, bushels, - - -	1,354,855	
Corn meal, barrels, - -	355	

Such is the "great" market the farmers have obtained in exchange for what they have sacrificed, and the prospect is, that the future will be worse. We have on our table the English journals of March, in which are given the prices of wheat in the various markets of England, and they vary from 32*s* to 36*s* per quarter, and for extra qualities from 36*s* to 40*s*. A fair average is about 35*s*, which gives $8 40 for the *quarter*, equal to nine and one-third bushels of sixty pounds each, and the price, in England, is, therefore, *ninety cents* a bushel.

The same journals give us the price of the markets of the continent, from which we see, that at Hamburgh, good qualities had been delivered free on board at 35*s*, and the freight to London was 1*s*, which would give 36*s*, or $8 64 per quarter, or *ninety-four cents per bushel*, as the price of *heavy* northern wheat, delivered in that "great grain market." Lots weighing *sixty pounds*, which is much higher than our average, had been put on board at 33*s*, which would give, as the cost, *delivered in London*, ninety cents per bushel. Barley weighing fifty-three pounds, had been delivered on board at 13*s* 9*d*, or less than *thirty cents* per bushel, and from the depressed condition of the English market, the prospect was that prices would be lower.

The potato rot seems to have disappeared, and the season having thus far been a remarkably fine one for the operations of the farmer, the prospects for the home crop in "the great grain market" were deemed remarkably fine, and in the event of the result realizing the expectations that were formed, there was reason to believe that the fall in the price of both English and foreign wheat would even yet be considerable. It is clear from this, that our farmers can, this year, have *no* foreign market to take the place of the *vast one* they have closed. What, then, are their prospects, if they have, as the late Commissioner of Patents assured us was the fact, *four hundred millions of bushels* for which a market must be sought abroad?

Such, fortunately for them, is not the case. The surplus for which a market has not been created at home is small, and a very brief period of protection would make a market in the land for *all* its products in the form of food. Our crop last year was somewhat smaller than usual, and the vast extent of the domestic market is shown in the fact that the price at home is greater than in any market of Europe; the consequence of which is, that the export of domestic grain and flour has ceased. Not so, however, with *foreign* grain and flour. The Canadian, being subjected to *the monopoly system of England*, has made, and can make, no market on the land for its products, and Canadian grain and flour, as we have shown, pass through New York on their way to England. Seeing this great fact, that the American farmer, being still, to a certain extent, protected, obtains a higher price than can be obtained in the markets of Europe, the Canadian farmer seeks for reciprocity, that is to say, he desires to sell his wheat and his flour in a protected market, and then to buy his cloth and his iron in England, to be imported free of duty—and what he seeks he is likely to obtain, for the representatives in Congress of the farmers and planters of the Union, seem desirous to try

the experiment of burning the candle at both ends. They have already closed the mills and furnaces, and the mines, and thus diminished the *demand* for food, and now they propose to admit foreign food free of duty, thus to increase *the supply*. Having killed the farmer's customers, they mean now to kill the farmer himself.

No exertion will be spared to secure the passage of the bill through Congress, and when passed, it will be found to constitute *a bounty on the land and labour of Canada*, to be paid, good easy souls, by the *farmers and planters, and land owners and labourers of the Union*. The people of the West are abandoning their farms to seek California, and land is diminished in price. The demand for labour is small, and immigration to us from abroad, by which value is to be given to land, is diminishing. We need only now to offer a bounty on the transfer of labour and capital of Canada, and then the measure of *free trade* will be full, but the revenues of the farmer and land owner will be small, and their purses will be empty. It is time that they should open their eyes to the folly of permitting their representatives thus to trifle with their interests. If they do not do this, and it is not done soon, it will be too late.

MUNIFICENT AND JUDICIOUS ENDOWMENT.

Elliott Cresson, Esq., the enlightened and zealous Secretary of the Colonization Society, through the agency of the Franklin Institute, has given one thousand dollars as a fund on condition that from its nett income the Institute shall prepare and award a gold medal, for such important inventions and improvements in the useful arts as they shall, from time to time, deem best calculated to advance *home industry*, and consequently the real independence of the country.

Mr. Cresson has also recently offered, through the Franklin Institute, who have acceded to the proposition, to bear all the expense of four silver medals, to be awarded to the largest amount of coffee, sugar, cotton and palm oil respectively, produced in Liberia, in 1851.

PROPORTION OF LIVE AND DEAD WEIGHT IN SHEEP.

	South-down Sheep.	Leicester Sheep.	Worcester Sheep.	Wiltshire Sheep.
	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
Weighed alive	155 0	152 0	161 0	175 0
Skin	17 8	20 0	23 0	23 0
Fat	13 2	11 8	12 8	13 8
Head and pluck	10 8	9 6	12 0	14 0
Entrails	13 4	11 2	15 0	17 10
Blood	5 14	6 0	8 0	8 2
Four quarters	92 6	92 0	89 0	97 0
	152 10	150 0	159 8	173 4
Waste; viz. urine and evaporation	2 6	2 0	1 8	1 12
Bones, clean	6 5¾	5 9	6 0	9 8
Fat, with the kidneys in	8 6	5 1	6 12	4 5½
Kidneys	0 4¾	0 4	0 5	0 5
Proportion of live and dead weight	20 gives 11¾	20 gives 12	20 gives 11	20 gives 11

—*Journal of the English Agricultural Society.*

SALT—ITS USE RECOMMENDED IN CURING TOBACCO, WITH NOTES BY THE EDITOR.

Tye-River Mills, Nelson, Va., April 17, 1850.

MR. JOHN S. SKINNER:—

Dear Sir—Thinking that an experiment of curing tobacco with salt might not be unacceptable to you, inasmuch as it would possibly interest some of your readers who are engaged in its culture, I will endeavour to describe it.

All agriculturists know that to place vegetable matter in such a condition as to prevent speedy decay, it is necessary to dry it: salt having a powerful attraction for water seemed to me applicable for that purpose to a plant so abundant of water as tobacco, and from the size of the stem so much more difficult to cure than the ordinary plants of the farm.

I felt disposed, however, to try it first on that of the most indifferent quality, in order that the loss might be small if the experiment failed. In 1846, a very wet year with us, I had some tobacco growing on a flat piece of land which suffered exceedingly from repeated and heavy rains; and as it was certain, if cured in the ordinary way, by fire, it would furnish only indifferent lugs, I resolved to try it with salt. It was cut, put on sticks, and hung on a scaffold near a curing house. A few days after it was taken down, laid on the grass, and salt from a sifter applied, first on one side, then on the other, to as great an extent as would adhere. The tobacco was then hung on the tier-poles in the house to the amount of six hundred sticks, being as much as the house would hold, and more than would have been placed there if fire had been intended as the curing agent. In a short time after the salt was applied drops of water appeared on the stalks, stems, and leaves of the tobacco, and a few hours after it was hung in the house the water commenced falling on the floor. The dripping continued several days, and the ground below was kept during the time as wet as it would have been by a light shower of rain.

After the dripping ceased the tobacco began to dry, and was soon cured, nothing more being done. Not a leaf was lost by house-burning, *i. e.* decay. The following winter it was stripped and bulked, and in the spring pressed (or prized, as the planters [properly] express it), for market. At that time it possessed a fragrance far beyond tobacco cured by fire, and was always more moist and flexible than the fire-cured. The hogshead that contained it was sent to Richmond, with the residue of my crop, in the spring of 1847, it being my intention to ship the salt-cured to England. At Richmond it was refused by the inspectors for being too moist. The succeeding fall it was shipped to a house in Liverpool to which I had previously shipped some tobacco of far better original quality. Tobacco being very low in England at that time, the house was instructed not to press it on the market. It arrived in England "in good condition, free from mould," according to the statement of the English merchant. From circumstances unnecessary to detail here, it was not sold until February, 1849, two years after it had been placed in the warehouse at Liverpool. From the account of sale now before me it sold for 3¼*d* sterling per pound. Two other hogsheads of tobacco of superior quality, cured by fire, sold at the same time, one for the same price, viz: 3¼ sterling per pound, the other at 3¾.

In order to test the matter still further I obtained the favour of an eminent manufacturer of tobacco at Lynchburg to make some experiments with a portion of it, to ascertain its capacity of resisting putrefaction. His letter to me of August, 1847, says: "The parcel of tobacco I have had manufactured. The condition of it was *very good*. It was not manufactured until

twelve or fifteen days ago, for the reason that I wanted to see how it would stand for a while with the stem in. It made no difference in it. In my next sweating I will carry it through the regular process, and then let it stand for some time. I have no doubt it will answer very well, and that next summer it will go through a natural sweat with perfect safety." It did so, and I have now a box of it (1850), opened a few days since, perfectly sound, but tasting slightly of salt.

Inferior tobacco, cured in this manner, I think would answer well for the German markets, where salt is extensively used in the manufacture of snuff, as stated by the select committee of the House of Representatives in their report of July 25, 1848, in which they quote from the report of Joshua Dodge, appointed as special tobacco agent by the president, and sent to various states of Germany (see *National Intelligencer*, July 19, 1849).

Great loss has been sustained by tobacco becoming putrescent, either during the voyage, or in the European warehouses. That I think might be avoided by curing with salt. The risk, too, of curing by fire will be obviated, and the constant vigilance indispensable where that agent is used, would be no longer necessary. The expense of the salt is not as great as the wood, where that article is inconvenient, and the attendance of a hand to watch the fire. And there can be no objection, on the score of flavour, in curing tobacco with salt when it is destined for markets where salt is used in its manufacture.

Yours, respectfully,

THOMAS MASSIE.

We take pleasure in giving place to communications such as the preceding, because they serve to exhibit something new in the way of agricultural practice and inquiry. For ourselves, we have sometimes said, and oftener thought that there is no branch of agricultural industry more susceptible of being benefited by scientific investigation and practical experiment than that of *making and curing tobacco.* In the first case, the chief desideratum is to obtain an early and adequate supply of plants. In the other, to secure a certain colour and consistency or quality of the leaf, depending on the uses to which it is to be applied. In respect to certainty in the supply of plants, who has attempted any expedients, except a discriminating selection of the site and soil for the seed-bed, fine tilth, early sowing, and protection from frost? And these are precautions so obvious that there is really no extraordinary merit—no particular proof of forecast or sagacity in adopting them; and yet these very palpable measures are so often neglected, or imperfectly executed, that some planters are as proverbial for their failure as are others for their uniform success. Why is it that such men as Mr. T. and Mr. S., or Mr. H., or Mr. B., in Prince George's, and the Leaches in Calvert County, can always plant early, and have plants to spare? But is there no room for improvement? Are there no appliances yet untried that would secure a supply of plants, beyond the chance of disappointment? Has anything been attempted, to make sure of it, beyond what has been the common practice time out of mind? In every other art, in every other industry, we see improvements constantly making. The tanner, the shoemaker, the hatter, the coachbuilder, the shipbuilder, the dyer, the cabinetmaker, the iron master, all—all are "racking their brains" for some improving invention—*en avant*—go ahead, is the motto of every trade and calling but that of the cultivation of the soil.

There are certain measures that we should like to see put in force, in the belief that the planter might always by these, have an *abundance of plants.* Let the seed-bed in the first place be thoroughly *well drained;* so that not a particle of *superfluous* moisture would ever remain on, or in it. Then let its surface soil be thoroughly intermixed, and its colour *darkened* with *pulverized charcoal.** This would at once attract heat, and retain moisture and ammonia, and we doubt not, much increase and accelerate the growth of the plants. And where the bed can be made near water, it might be easily watered with a cart and contrivance such as is used for watering the streets in large cities. Spaces might be left in the bed for the horse and the wheels to travel in, without touching the plants. But care must be taken never to use water at a temperature below that of the

* The value of charcoal in agriculture is getting to be so well understood, that in our next we will give instructions for preparing it, from personal observations in boyhood.

soil on which it is applied, lest the roots should be chilled and the plant be injured instead of benefitted.

Then as to the quality of the tobacco, in reference to colour and inherent consistency or flavour; very much we know depends on the composition and quality of the soil and climate—but has any attempt been made to ascertain *how much?* and in what the connection and dependence of the one on the other consists? What experiments have been instituted to determine the effect of early or late planting on the colour and consistency of the leaf? Who can tell, as the result of actual trial, the effect in these respects, of high or low, early or late topping of the plant? and how much depends, too, upon exactness in the degree of maturity at the time of topping or cutting? Should not all these things, with every intellectual planter, be matters of actual investigation, and experiments, for rational amusement, as well as for the sake of the "almighty dollar?" Does not this subject open a worthy and inviting field for the practical application of chemistry?—that noble art which, since the days of Sir Humphrey Davy, has done so much to enlighten, invigorate, and reward labour in this and other departments.

When it was announced that *cotton* might be substituted with economy and effect for "the villainous compound" of saltpetre and brimstone, with what alacrity the government with all its power, and all the tests of its scientific laboratories (for military uses) stepped forth to see what could be made of it. Now, only let it be understood that tobacco, of a certain color and texture, could be made the most efficient means of "killing our enemies," and the government would follow up the investigation as eagerly as young hounds pack and open when laid on the trail of a roasted bone.

To return to this interesting suggestion of our correspondent for divesting tobacco of its redundant moisture by the agency of salt, and thus accelerating the process of curing and guarding it more effectually against putrefaction; we have only to suggest one difficulty which occurs to us. Suppose the whole house to be hung with tobacco thus salted, or any considerable number of tier above tier, would not the dripping, which, says our correspondent, "for several days, kept the ground as wet as from a slight shower of rain," be apt to damage all the lower tiers? And another.

Would not the sweepings of the tobacco houses and the inspection houses make excellent manure for seed-beds, just as its leaves and trimmings are found to be the best, if not an all-sufficient manure for the grape vine—the manure which nature in fact provides for everything?—*Edit. P. L. & A.*

SEX OF EGGS.

DURING the last summer, I wanted to raise a stock of poultry from a favourite hen and cock. They were of the black-breasted red game breed. The cock was purely bred, but the hen was a little crossed. The eggs she laid were of a deep buff colour, and as she was the only hen I had which laid yellow eggs, they were easily collected. When I had 26 eggs, I put 13 of the largest under a brood hen to be hatched; one egg got broken, the other 12 had chickens in them; one, however, died in the shell, and so the number was reduced to 11. Of these, one died before I could ascertain its sex; of the 10 remaining, 8 were cocks and 2 were pullets. The 13 smaller eggs I also put under a broody hen, and she hatched me 10 chickens. Of these, 8 were pullets and 2 were cocks. There is no difference in the shape of the eggs laid by the same hen; in size they vary but little. I observe this peculiarity, that although the hen has yellow legs and the cock black, yet, throughout four broods, which I have had from the same hen and cock this summer, every yellow-legged chicken has proved a cock, and every black-legged one a pullet. *Nomen fictitium.*

SMOKING STATISTICS.—In the year 1848, eight millions one thousand four hundred and forty-nine pounds one shilling and four pence were spent by the people of this kingdom in tobacco! If the tobacco had been worked into *pig-tail* half and inch thick, it would have formed a line 99,470 miles long—long enough to go nearly four times round the world.

GARRETT AND SON'S PATENT HORSE-HOE.

These gentlemen appear now to stand at the head of inventors of agricultural implements in England. Twenty prizes have been awarded them by different agricultural societies for their patent horse-hoe, and down to the latest trial it seems to have no competitor. We never read of anything of this sort, that we do not wish for an importing society of such like new and promising inventions, since none of our societies or institutes will undertake it. We should covet to be counsellor in such cases to wealthy and liberal men, such as Mr. Lenox of New York, the purchaser of the original manuscript of Washington's Farewell Address, or the munificent Mr. Cushing of Boston. They are the sort of men to do good to agriculture, when they take it in their head to turn to it for amusement and usefulness. But we are getting away from Garrett and Son's patent horse-hoe.

Among a great number of flattering notices of it, we find the following in a last month's number of the *Mark Lane Express*.

"Twenty prizes have been awarded to R. Garrett and Son by the Royal Agricultural Society of England, and other societies, for this invaluable implement. If there be one implement more than another to which R. Garrett and Son could confidently direct the attention of the agriculturists, it is to their Patent Horse-Hoe, from a firm conviction, founded on long experience, that any farmer who has once experienced the advantages resulting from its use would on no account be without it. But perhaps the following extracts from the reports of the Judges of Implements, at the various meetings of the Royal Agricultural Society, will speak more to its efficiency than it would become the manufacturers to do:—

"*At Liverpool, in* 1841.

"Messrs. Garrett and Son's Hoe deserves the notice of the agriculturist as an implement that will greatly tend to give an horticultural finish to field operations. It is adapted to all the prevailing methods of drill culture, either for the cleansing of crops, drilled upon the level surface or on ridges, the axle of the wheels being movable at both ends, to suit the varied intervals between the rows of plants; and as each hoe works on a separate lever, the weeds are effectually destroyed, however uneven the surface of the ground, each hoe being kept at a uniform depth by means of regulating keys. The swing steerage adapted to this implement is a valuable addition to horse hoes, as they may thereby be guided with the greatest precision, perfectly scarifying the intervals, without the possibility of injuring the corn or plants."—*Vide Royal Agricultural Society's Journal*, vol. ii. Appendix, p. 110.

"*At Norwich, July*, 1849.

"Horse-Hoes on the Flat.—For this prize there was no one to compete with Mr. Garrett's well-known implement, which on this occasion fully sustained its previously well-earned reputation.

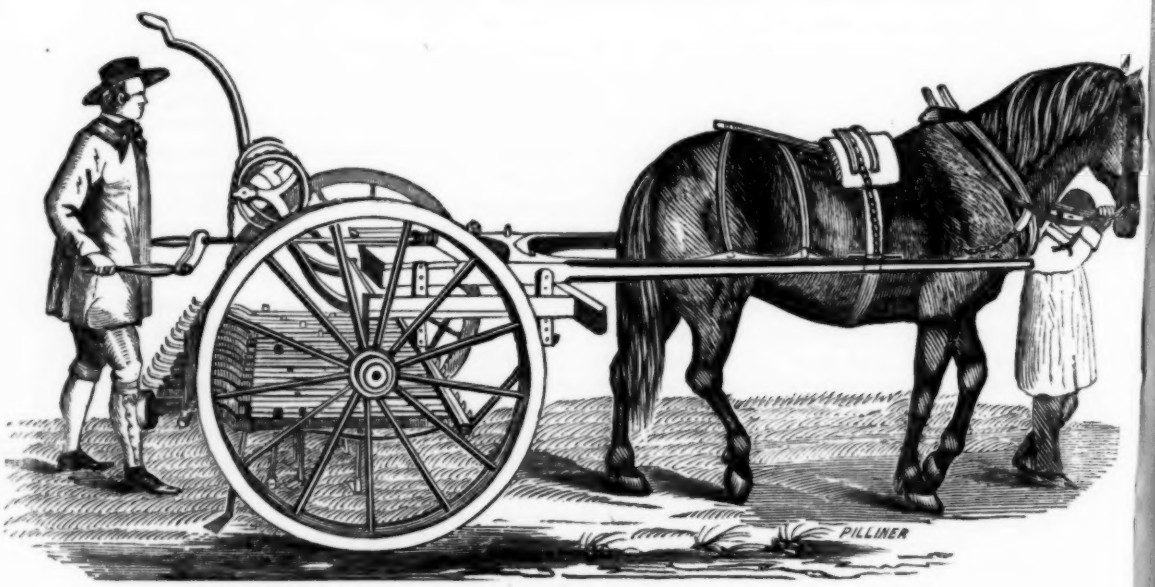
"Horse-Hoes on the Ridge.—The Judges feel bound to notice Mr. Garrett's double ridge hoe, which did its work in a most satisfactory manner; and to those farmers who use a double ridge drill, which it is best adapted to follow, it is a great acquisition. By having additional knives, it is convertible into a hoe for corn, or root crops on the flat.

"The following is an extract from a letter written by P. Pusey, Esq., M. P., to the Council of the Royal Agricultural Society, on horse-hoeing flat-drilled turnips (*vide Royal Agricultural Society's Journal*, vol. iv. p. 77). After writing upon the merits of the hoe, Mr. P. remarks—'As any mere trials, however, are less satisfactory than the actual work on a farm, I have obtained an account of its working from practical authority, and the following statement of its performance will, I trust, be satisfactory. Several farmers, I know, regard this horse-hoe as one of the best implements lately invented. On an arable farm of 400 acres, the price, which varies from 19*l.* to 13*l.* 10*s*, might be saved by its use, I should think, in the first season.'

"Extract from the writings of Hewitt Davis, Esq., 3, Frederick Place, Old Jewry, London:—'As Garrett's horse-hoe is calculated to work a most important reform as regards the cleaning of land, and as I have practically tested its utility, I may be permitted to bring it under the consideration of your readers. By its use all corn sown in rows, from 9 inches upwards, may be hoed in a superior manner, and at an expense of only one shilling per acre. Having at first great doubts of the possibility of any implement drawn by a horse being used in the narrow intervals of cereal plants, I began by buying one. I have now four; and that I may apply it also to my young clovers, I have had made a new drill on purpose to put in the clover seed midway between the rows of corn [meaning grain]. My practice for many years has been to hand-hoe in the spring all my corn, as well to move and lighten the ground as to get rid of the weeds. The use of the horse-hoe has the advantage over the hand-hoe, besides saving of expense, that its work

is much more perfect; the depth it penetrates is greater, and ten acres a day may be done with a horse, and man and boy. Farmers are far too little alive to the mischief that weeds among their corn do them, still less to the fresh life and vigour that a moving of the earth round a growing plant affords; in this they may, with great advantage, take lessons from gardeners; and the implements of Messrs. Garrett enable them very effectually, and at little cost, so to improve their practice.'"

The following cut of this famous hoe is a much better engraving than the one from which it was copied, and which we find in the Mark Lane Express. Who can undertake to say that this implement, so much valued in a wheat-growing country, where thirty bushels to the acre is as common as twelve in ours, would not be found equally valuable with us? Has anybody tried it? In England they commence using it about the first of April, and ascribe much of its valuable effects to its giving the wheat a good working or tillage, as well as to its destruction of grass and weeds.



THE CORN-WORM—HOW TO PREVENT ITS RAVAGES.

JAMES H. GILL says, in the *Ohio Cultivator*: "I have never been troubled with this worm much. My plan for defeating them is, to stir the ground as soon as the corn is all up and keep at it, from day to day, until it is too large for these destructives. I generally, after getting the corn say four inches high, try to have it ploughed every ten days, until it begins to tassel—if the soil is very rich, say about eight days. I never stop ploughing for drought, and never plough when *wet*. My method of planting is, to have two of the best and most reliable hands that I can get, to drop after one plough, and three next best to cover after them. I generally drop four grains on an average to the *hill*—if the ground is moist cover about three inches; if dry, about four inches. My object in having so many hands follow one plough is, that they can take their time, and do their work just as I tell them. I never have any occasion to replant.

"I scarcely ever hill my corn more than is sufficient to smother the weeds. You have noticed, no doubt, that there is a short *joint* near the ground, almost as hard as wood. My opinion is, that nature designed this for the special purpose of supporting the stalk and ear above it; and, from observations that I have made, I think it very bad policy to cover it up with soil.

"This system of managing pays well, though it may seem to cost more than the usual methods."

HEAR BOTH SIDES.

For "The Plough, the Loom, and the Anvil."

THE following is an extract from "Arator," a series of Agricultural Essays, by John Taylor, of Virginia, a soldier of the Revolution, Governor, and Farmer.

Speaking of farmers and mechanics, he says (p. 66) :—

"We got rid of tythes, and now we clasp banks, patronage, and protecting duties to our bosom. Ten per centum upon labour was paid to a priesthood, forming a body of men which extended knowledge and cultivated good morals, as some compensation for forming also a legal faction, guided by the spirit of encroachment upon the rights and property of the majority. Forty per centum is now paid on our labour to a legal faction guided by the same spirit, and pretending to no religion, to no morality, to no patriotism, except to the religion, morality and patriotism of making itself daily richer, which, *it says*, will enrich the nation, just as the same faction has enriched England. This legal faction of capitalists, created by protecting duties, bankers and contractors, far from being satisfied with the tythe claimed by the old hierarchy, will, in the case of the mechanics, soon appropriate the whole of their labour to its use, beyond a bare subsistence; though, in the case of farmers, it has yet only gotten about four times as much of theirs as was extorted by the odious, oppressive, and fraudulent tythe system."

We have on hand requests from several correspondents to insert passages from various authors holding opinions diametrically opposed to that we teach, which is, that if the farmer and planter would prosper, they must pursue a course tending to make a market on the land for the products of the land. Our motto is, "Hear both sides," for, knowing that we teach the truth, we feel at all times gratified in being able to let our readers see the weakness of the arguments of our opponents. They, on the contrary, never publish a line for us in return, because they cannot refute the argument that is offered for consideration, and they do not desire that their readers should see its strength.

For some time past, all the space we could properly devote to *the political economy of agriculture* has been occupied by the chapters on the Harmony of Interests, as is the case with the present number. Nevertheless, to comply with the desire of one of our correspondents, we give the above passage from the *Arator* of Col. Taylor, proposing to accompany it with a few remarks, the first of which is that we have very small respect for *authority* in matters of this description. That which we can see not to be true we certainly will not believe, because taught by Washington, Franklin, or Jefferson, while that which we see to be certainly true, we will not disbelieve, even though differing from the views of Col. Taylor, Mr. Calhoun, or Mr. Van Buren. We desire to *think for ourselves*, and our first wish is that of inducing the farmers and planters of the Union to *think for themselves*, and to *act for themselves*, instead of intrusting the care of their best interests to demagogues, whose opinions change from day to day as prompted thereto by selfish views, on one day advocating protection to the farmer in his efforts to draw the maker of iron to his side, and on another, the maintenance of the *monopoly system* of England, precisely as the one or the other appears most in harmony with their lust for office.

Our opponents rely exclusively on *authority*. They *dare* not grapple with the facts. They tell us what was taught by Say, Ricardo, Malthus, or by Col. Taylor, but they do *not* tell us how it is that Col. Taylor should have understood what was the true policy of the Union better than General Jackson, who truly said we had been too long subject to the policy of British merchants. Mr. McCulloch is the highest living authority of the school which advocates the system of giving to the people of England the *monopoly* of the supply of iron for the uses of the world, but they cautiously refrain from quoting any of the numerous absurdities into which his system leads him. We have not remarked in any one of their communications, a desire that we should print that portion of one of his works in which he *proves*, and in perfect accordance with the rest of his system, that the expensive wars of England have been highly advantageous in preventing the *excessive* growth of capital. Neither have we remarked the suggestion that we should copy his defence of the system of *primogeniture*, by aid of which the first born son is enabled to sweep off all the property, leaving his younger brothers and sisters to be supported out

of the taxes raised for the support of fleets and armies engaged in carrying on the *advantageous* wars of England. Now, if one sentence from a book written by a man whose name is to be regarded as *authority*, or one part of a system, be good, the whole should be better, and they should give it to us, proving, at the same time, that a system calculated, and intended, for the maintenance of a proud aristocracy, is worthy to be copied by an equally proud democracy.

Authority has filled the world with wars, and has everywhere impoverished and ruined the farmers and planters, taxing them for the maintenance of soldiers and sailors,* paupers and nobles, traders and transporters. *Common sense* teaches that the smaller the number of persons standing between the producer and consumer, the larger will be the fund out of which both are to be maintained. *Uncommon sense* furnishes *authorities* in support of the doctrine that the more widely separated are the consumer and the producer, and the greater the number of soldiers and sailors, ships and seamen, traders, transporters, and demagogues, to be supported by the labours of the farmer and planter, *the producers of all the good things of the earth*, the more rapidly will both farmer and planter increase in prosperity. We go for the *common* sense of the many, and therefore, it is that we do not fear the arguments of our opponents. They go for the *uncommon* sense of the few, and therefore it is that they do not *dare* to enlighten their readers. We are democrats, believing that the people are capable of governing themselves. We should be glad they would define their position, and let us know what is the estimation in which they hold the people before whom they refuse to place the arguments for, as well as those against, the system which seeks the attainment of perfect freedom of trade by means of protection to the farmer and planter in their efforts to break down the monopoly system of England, and bring the loom and the anvil to take their natural places by the side of the plough and the harrow. Are they, too, democrats?

We would strongly recommend to the friend to whom we are indebted for this extract to lay by Col. Taylor's book, and study for himself the things that are passing around him. If a Virginian, let him examine how much the market of the farmer is *increased* by a system which closes the mines and furnaces of the State, and compels the miners and furnace-men to become rivals, when they would gladly remain customers. If a farmer, let him look to the factories that have failed in the last two years, and determine whether the people who are idle can be as large customers to himself and his neighbours, as when they are employed, and well paid for their labour. If a planter, let him determine whether the idle miners and iron-men can consume as much cloth as when they were employed. If a landholder, let him look to the constantly diminishing immigration and determine if the value of land is not deteriorated by a system which tends to diminish the importation of men. If an American, let him look to the fact that every movement of the country is dictated by English banks and bankers, merchants and manufacturers, and let him then determine if the national pride is likely to be gratified by the results of a system which keeps this Union in a condition entitling it to be styled, by English reviewers, the first and best, and most profitable of the colonies of England. "An English colony," says the Edinburgh Review, "in a matured state!" Be he what he may, we beg him for a time to forget his theories, and his reverence for mere names, and to study the facts we have furnished for his consideration. Let him do but that, and we are well satisfied that the day will not then be far distant when he will unite with us in the opinion that if the farmer and planter would prosper, *they can do so in no other way* than that of making a market near the plough for the products of the plough.

DIFFERENCE BETWEEN A TRADESMAN IN THE YEAR 1750 AND 1850:—

1750.	1850.
Man, busy in his shop;	Man at his country-seat;
Wife, brewing malt and hop;	Wife, plum'd and jewell'd *ensuite;*
Girl, scorning not the mop;	Miss, aping the *élite;*
Boy, active, not a fop;	Boy, on the hunter fleet;
Bills paid, and fortune made.	Claims unmet, and the *Gazette.*

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* "Give me the money that has been spent in war [to force the English colonial system on the world], and I will purchase every foot of land upon the globe. I will clothe every man, woman, and child in an attire of which kings and queens might be proud. I will build a school-house upon every hill-side, and in every valley on the habitable earth."

I.—EXPERIMENTS AND OBSERVATIONS ON THE PRODUCTION OF BUTTER.

BY PROFESSOR TRAILL.

The produce of the dairy forms so important a branch of agricultural industry, that it appears surprising how few attempts have been made to investigate the comparative merits of different methods, employed in various places, for the production of butter and cheese. The qualities of these articles are well known to differ greatly in our own country; yet each district has gone on for long periods to follow its own methods, as if each had attained perfection in the art. This is a proof either of the want of any fixed principles to guide us in the practice of these important economical operations, or of their being unknown to the majority of farmers.

The subject long engaged the attention of the late estimable Dr. Gerard of Liverpool and myself, and for several years, especially in the years 1806 and 1807, we carried on many experiments; in some of which we were assisted by our friend, Dr. Bostock, now of London.

It was originally intended to comprise in our investigations the whole subject of the production of butter and cheese; but our professional avocations, and other interruptions, prevented the completion of our plans, after we had performed numerous experiments on the production of butter. The hope of being one day able to complete them, has hitherto prevented any account of them being published. On the death of Dr. Gerard, the whole papers, in a state of great confusion, came into my possession; and I now propose to lay before the Highland and Agricultural Society of Scotland the principal results which we obtained.

We had a dairy of four, sometimes of five, cows at our disposal; but, after numerous preliminary trials, we found that the numerical results, on the quantity of the butter obtained, were most uniform and satisfactory when we made each experiment on a few pints of milk only. It is true that the proportional yield of butter was sometimes greater from a large than from a small quantity of cream or milk; but the different experiments were found to be most accordant on being repeated, when we operated on quantities not exceeding six English pints for each churning. This probably arose from our being then able to carry on the process in glass vessels, which permitted us to see the progress of the operation, and to collect the product more perfectly; and also from our being enabled to use, in experiments on this small scale, a more delicate balance to ascertain the weight of the butter obtained.

We were also thus enabled to make the comparative experiments on the same milk, on the same day—points of essential importance—as the richness of even the same cow's milk is liable to vary considerably from day to day, as we found from experiment, according to her food, her health, and possibly, too, according to the state of the weather. We also found that the time which had elapsed from the last calving had much influence on the quantity of the butter. The quantity of butter was smallest, and the proportion of cheesy matter greatest, just after calving; and, generally speaking, the milk of those cows which yielded the *least* quantity of milk, was richest in butyraceous matter. Thus the quantity of butter afforded by a quart of milk of a small Alderney cow was considerably more than from a quart of the milk of the large Lancashire breed.

We proposed to ourselves various objects; such as ascertaining accurately the temperature acquired by milk in churning (which, I may state in general terms, without detailing the experiments, we found to range from 5° to 8° of Fahrenheit); the effect of external temperature on the production of butter; the effect of adding water to the churn, as is practiced in many places; but, above all, to ascertain the comparative advantages of churning—

1. Sweet cream alone.
2. Sweet milk and cream together.
3. Sour cream, or that slightly acid.
4. Sour milk and cream together.
5. Scalded cream, or what is called *clouted cream*, as practised in Devonshire.

Each of these five methods of preparing the milk afforded very different results; and, as these investigations seem to be the most important, I shall give them more fully than the rest, selecting, from numerous experiments, those which were most carefully performed, and are, therefore, most worthy of confidence. Although the absolute quantity of butter differed with the season and condition of the cattle, yet as the five methods were practised at the same time, on equal quantities of the mingled milk of four or five cows, the comparative results of each series may be considered as not far from the truth.

It is well known that the milk first drawn from the cow is far inferior in quality to

that last drawn; the latter is technically, in Lancashire, called the *afterings*, and in many towns is generally sold as cream. It seemed also an object of interest to ascertain the comparative quantity of butyraceous matter yielded by the first and last part of the milking, as also the quantity of *caseine* or curd in each.

Series 1.—*The comparative Value of the First and Last Portions of the Milk.*—For this purpose a cow was selected which had calved five weeks before, and the experiments were begun on Monday, 26th May, 1806.

No. 1 was the first pint milked.

No. 2 was a pint of the whole milking, after the separation of No. 1 and No. 3.

No. 3 was the last pint of the milking, or *afterings*.

As in previous experiments, *scalding* the milk was found to favour the more perfect separation of the butter, after the three portions were allowed to remain twenty-four hours in the milk-house. They were at the same time placed in earthenware basins, in a pan of water heated to 180° Fahr. They were removed within an hour from the water, when the milk had acquired a temperature of 130°. They were replaced for ten hours in the milk-house, and then examined. No. 1 then showed scarcely any indication of cream. It formed a very thin pellicle only; and the quantity, being too small to be churned, was estimated, from other comparative trials, to be no more than equivalent to five grains of butter. No. 2 was evidently richer to the eye, but the cream was pale-coloured, and, when churned, yielded 181 grains of firm butter. No. 3, The cream, before churning, had a rich yellow tint; the butter produced was well flavoured, and weighed 551 grains. The difference between the richness of the first milk and the afterings, in a cow yielding about fifteen pints of milk at each milking, is thus as 1 : 110.

When a cow has calved less recently, the difference between the first milk and afterings, however, appears not so great. On the 9th of August, the milk of the same cow, which then yielded fourteen and a half pints at a milking, was subjected to experiment in a similar manner.

The three portions were placed in similar basins in the milk-house for forty hours, and were then scalded till the temperature of the milk rose to 145°. The milk was drawn off next day from below the cream by means of a siphon, and the three portions were churned, in glass vessels, at the same time, for thirty minutes. The butter was soft and very white, although it was allowed to remain for twenty-four hours after churning in cold water. This probably arose from the heat of the weather; the thermometer in the shade then standing as high as 73°. When the butter was washed, and worked to free it from water,

No. 1 yielded 31 grains.
No. 2 " 252 "
No. 3 " 416 "

Here the proportion between the first and last milking is as 1 : 13.42 nearly, or 1 : 13½.

On this occasion, we took the opportunity of repeating an experiment formerly made on the proportion of caseine or curd in each of those portions of milk, by coagulating small but equal parts of each by means of rennet, and also by sulphuric acid, which we had found to afford a larger and more firm curd than rennet. Two ounces of each portion of the milk, after the cream was removed, were measured out (that is, one-eighth of an English pint); a teaspoonful of filtered rennet was added to each; to equal quantities of the same milk forty drops of sulphuric acid were added; and the six cups were placed in boiling water for some minutes. They were all firmly coagulated. The curd was separated from each; and, when equally dried, in a heat about that of boiling water, each was accurately weighed.

	With Rennet.	With Sulphuric Acid.
No. 1 gave of dry curd	14 grains.	18 grains.
No. 2 " "	13 "	18 "
No. 3 " "	14 "	19 "

This shows, that though the quantity of oily matter differs materially in the first milk and the afterings, the proportion of caseine or curd differs but little.

The experiments show the caseine obtained from each pint to be equal to—

	With Rennet.	With Sulphuric Acid.
No. 1	112 grains of curd.	144 grains.
No. 2	104 " "	144 "
No. 3	112 " "	171 "

SERIES 2.—*Comparative Quantity of Butter yielded by*

No. 1. Sweet cream churned alone.
No. 2. Sweet milk and its cream churned together.
No. 3. Sour cream churned alone.
No. 4. Sour milk and its cream churned together.
No. 5. Scalded cream, or Devonshire cream, churned alone.

On the 24th May, 1807, the milk of four cows was drawn in the same vessel, passed through a strainer, and then divided into five portions of six English pints each, which were placed in similar basins of earthenware, in a milk-house, the temperature of which ranged from 55° to 60° Fahr.

Monday, 25th.—The temperature of the air was very hot, 76°; but that of the milk-house, by constant evaporation of water, was kept about 60°.

Tuesday, 26th.—Thirty-nine hours after the milk had been drawn from the cows, it was removed from below the cream of No. 1 and No. 3, by a siphon; and we immediately began to churn the cream of No. 1, and the milk and cream of No. 2, in glass vessels.

No. 1. *Sweet Cream churned alone.*—Having previously found that the addition of a small quantity of cold water to thick cream facilitated the separation of the butter, half-a-pint of water was added to the cream, and it was found that the temperature of the mixture at the commencement of the churning was 62°. In fifteen minutes, butter appeared in grains; the churning was continued for twelve minutes longer, *i. e.* twenty-seven minutes in all, when the temperature of the whole had risen to 70°. The butter was now collected into one mass; but, from the warmth of the weather, was very soft. It was, therefore, put into cold water, and placed in the milk-house until the morrow, when it was worked and washed in the usual way, and weighed 1386 grains. It was of a good colour, and perfectly well flavoured.

No. 2. *Sweet Milk and its Cream churned together.*—The mixture of sweet milk and cream was churned at the same time; but, though cold water was here added, after one and a half hour's churning, no butter was to be seen. The churning was continued for as long (in all for three hours), but without our obtaining a particle of butter.

No. 3. *Sour Cream churned alone.*—On *Thursday, 28th May*, the cream of No. 3, which had been separated on Tuesday, and placed in the milk-house, was now slightly acid, and was churned, after half a pint of cold water had been added to it. In twelve minutes butter appeared; and in eight minutes more, it had united into one mass. During the churning, the temperature of the cream had risen from 54° to 63°. The buttermilk was very poor, fit only for pigs. The butter, when well washed, and worked to separate the watery part, weighed 1756.5 grains. The colour and taste were very good.*

No. 4. *Sour Milk and its Cream churned together.*—On the same day, *28th May*, the milk and cream which had become acid were churned together, and half-a-pint of cold water was added. It was fully fifty-seven minutes before any butter appeared; and before the churning seemed to be completed, one hour and fifty minutes had elapsed. This shows that much more time is required to churn milk and cream together than to obtain the butter from cream alone. The butter was, in this instance, diffused in small grains, and, when washed and worked as long as any colour was communicated to the water, it weighed 1968 grains. Its colour was rather paler than the last, but its flavour was good.†

No. 5. *Clouted Cream churned alone.*—On *Tuesday, the 26th*, the milk and cream of No. 5 were placed in a vessel of warm water, until the temperature of the milk rose to 156°. In these experiments on scalded cream, we had the assistance of a Devonshire dairymaid to superintend this part of the process. She generally placed the vessel containing the milk among the embers of a low fire; but we preferred water as the heating medium. She judged of the due degree of heat merely by dipping her finger in the milk, and the wrinkling of its surface; and we found that the heat considered by her sufficient generally ranged from 135° to 156°, and was occasionally as high as 160° or 162° Fahr. The milk was drawn from below the cream by a siphon; and the latter was placed in the milk-house, until the following day, before it was churned. It was churned on Wednesday, the 27th. The milk of this portion was very poor, had a scalded taste, and would have been unsaleable.

I may here state, that by churning the milk of No. 1 and of No. 3, we could obtain a few more grains of butter, on some occasions; but we never could obtain the smallest

* The buttermilk from cream alone was poor and thin, in this and in all our experiments, whether water had been added to the churn or not.

† The buttermilk from No. 4—that is, from churning milk and cream together, when slightly acid, is a bland, agreeable fluid, containing much albumen or caseine. It finds a ready market in towns, and is much used in Lancashire as an article of diet. It is therefore a valuable product, which ought to be considered in an economical point of view.

quantity of butter from the milk of No. 5—so completely does the scalding process separate the butyraceous matter from the milk. The butter of No. 5, when well worked and washed, weighed 1998 grains. It had a rich yellow colour, tasted agreeably, and was quite free from the peculiar scalded flavour of the milk.

Series 3.—This series, a repetition of the preceding experiments on the milk of four other cows, was commenced on *Thursday, the 25th of June*, 1807, or a month after the last series. As before, the whole milk was mixed, strained, and divided into five equal portions, of six pints each, which were treated as the last.

No. 1. *Sweet Cream churned alone.—On the 26th*, or in twenty-four hours after the milking, the milk of No. 1 was drawn off by the siphon. The temperature of this portion, at the commencement, was 62°; and when the churning was finished, had only attained to 65°. The churning required forty-five minutes. Water had been added as before, and the butter was obtained in grains like peas. When well worked and washed, it weighed 1137 grains. Its colour was good and its flavour excellent.

No. 2. *Sweet Milk and its Cream churned together.*—The sweet milk and cream churned together afforded no butter.

No. 3. *Sour Cream churned alone.—On the 29th of June*, the cream, which had become sour, was separated by the siphon and churned. The temperature at the commencement was 58°—at the end, it was 65°. The butter was fully formed in forty minutes, and united into one mass. Well worked and washed, it weighed 1247 grains. Its taste was good, as was its colour.

No. 4. *Sour Milk and its Cream churned together.*—At the same time, the sour milk and cream were churned, with the same precautions as before. The churning occupied two hours; when the temperature had risen from 58° to 68°, or nearly 69°. When worked and washed, the butter weighed 1447 grains. The qualities equalled that of No. 3.

No. 5. *Clouted Cream churned alone.*—The cream of this portion was scalded on *Friday, the 26th June*, by being heated to 168°, which temperature it attained in one hour, the usual time required for this operation. On *Saturday, the 27th*, it was churned in forty-five minutes; during which process the temperature of the cream rose from 58° to 64°. When well washed and worked, it weighed 1591 grains. The butter in the mouth had a granular feel, which we attributed to the heat rising, by accident, too high; by which an unusual portion of caseine appeared to be separated with the cream. The butter had, however, no peculiar flavour from the process; although the milk would have been unsaleable, from a strong taste of *scalding*.

The general result of these experiments, confirmed by many similar trials is, that the largest quantity of butter is produced from the scalded or Devonshire cream; the next in quantity from the method of churning the milk and cream together, when they have become slightly acid; the third in quantity is afforded by cream kept till it is slightly sour; the smallest quantity is obtained from the sweet cream. We were unable to obtain butter from churning sweet milk and cream together; and in several other series attempted it no more.

In one series of experiments we used as much as 11½ English pints of milk in each experiment; but we then had to churn in vessels of tinned iron; and we did not find the results so uniform as when operating on smaller quantities in glass vessels.

Series 4.—This series was intended to decide on the qualities of the butter obtained by the four processes above detailed, as to keeping fresh. These experiments were made, as those of the next series, on the butter obtained in most of our experiments. No. 1 always remained, when exposed freely to the air, longer without any rancid taste than any of the other kinds of butter. No. 3 and No. 4 were nearly on an equality in this respect; if there was any difference it was in favour of No. 3. No. 5 became rancid more quickly than No. 3 or No. 4.

Series 5.—Equal quantities of butter obtained by the four processes were salted with equal quantities of salt, then spread thinly on glass plates, and exposed to the air in a dry room. They were inspected from time to time, and it was ascertained that the taint of rancidity always appeared in the following order, commencing with that which showed it first:—

In No. 5, or butter from scalded cream.
No. 4, " " a mixture of sour milk and its cream.
No. 3, " " sour cream.
No. 1, " " sweet cream.

The cause of this difference in their power of resisting decay was believed to depend on the varying proportions of caseine, or curdy matter, in each. To determine this point, another series of experiments was undertaken.

Series 6.—Two hundred grains of each kind of butter were kept liquefied, by a moderate heat, in glass capsules; the oily matter was taken up by bibulous paper, successively applied, as long as any oily stain was perceptible; the watery liquid which remained below the oily matter was evaporated, and the solid residue, after being well washed, squeezed between folds of blotting paper, and dried, was carefully weighed. Unfortunately I have been unable to recover the details of this series of experiments; but the following are the general results, which decidedly show that the presence of the greater quantity of caseine in butter coincides with its greater tendency to become rancid. The four kinds of butter afforded caseine in the following order, commencing with that which yielded the most:—

No. 5, butter from scalded cream.
No. 4, " from acid milk and its cream.
No. 3, " from acid cream.
No. 1, " from sweet cream.

Experiments had been made in *October*, 1806, which proved that *overchurning*—that is, continuing the process after the full separation of the butter—was very injurious to the quality of the butter, although it increased its weight; and these, though made before the experiments detailed above, shall now be indicated, as

Series 7.—The cream of six English pints of milk was separated by a siphon, and churned in a glass vessel. The butter was formed in about half-an-hour; but the churning was continued for half an-hour longer, when the butter had lost its fine, yellowish, waxy appearance, and had become pale and soft, while very little liquid remained in the churn. This butter was so soft that it could not be washed and worked, until it had remained some hours in cold water. It was pale, still rather soft, and, when weighed, =2566 grains. That this was beyond the due quantity of good butter, from such a quantity of cream, was apparent, when the comparative experiments on the same quantities of the same milk, but only churned till the butter was well formed, gave the following results:—

No. 1, The sweet cream, overchurned, yielded = 2566 grains.
No. 3, The acid cream duly churned, " = 2187.5 "
No. 4, The acid milk and its cream, do. " = 2397.5 "
No. 5, The scalded cream, do. " = 2671 "

The butter of No. 1 tasted insipid, never became firm, and soon turned rancid. It was found to yield a very unusual quantity of both caseine and of watery fluid, which could only be separated by melting the butter.

Similar experiments were repeatedly made, the results of which showed that overchurning is very injurious to the quality of the butter; but it adds considerably to the weight of the article; and it appears to be frequently practised in Lancashire, especially in manufacturing *fresh* butter for *immediate sale*.

It is a common opinion in Lancashire that considerably more butter is obtained by adding *hot water* to the churn than by using cold water. We had invariably found that the addition of a small quantity of cold water, especially in summer, greatly facilitated the separation of the butter, and rendered it more easily washed. But a dairyman informed us that the same quantity of cream, which will yield 14 lbs. of butter with *cold water*, will afford 15 lbs., or even 15½ lbs., with an equal addition of hot water. This formed the subject of

Series 8.—*On the 15th of November*, 1807, we took, from the mixed milk of four cows, two portions of six English pints each, and set them aside in a milk-house, the temperature of which ranged from 59° to 52°. *On the 17th November*, the cream was removed from each by the siphon, and churned at the same time, in circumstances as nearly equal as possible, except in the addition of water. The temperature of the cream, at the commencement of the churning, was 55°.

No. 1. To this portion an ounce and a half of water, at temperature 45°, was added. After churning for eighteen minutes, the butter began to appear; two ounces more of water, at 45°, were added, and the churning was carried on for five minutes more. The butter was then worked and washed.

No. 2. To this portion of cream one ounce and a half of water, at 105°, was added; butter began to appear after churning for thirteen minutes, when two ounces more of water, at 105°, were added, and the churning was continued for five minutes more, or eighteen minutes in all. The temperature of the contents of the churn was 71°. This butter was very soft, and, therefore, cold water was added, in which it was worked and washed.

Unfortunately, the note of the weight of the butter in this series has been lost; but I

find it stated that the butter of No. 2 was rather more bulky, and weighed a little more than that of No. 1; that it neither was so firm nor of so rich a colour as the butter of No. 1; and that, on pressing it next day, some watery fluid escaped from it. From this we inferred that the quality of the butter was deteriorated by the addition of hot water; and that the quantity obtained, by this practice, of marketable butter, is not so great as is commonly alleged in Lancashire, although the time of churning is thus somewhat abridged.

The principal results of the experiments above detailed, are—

1. That the addition of some cold water during churning facilitates the process, or the separation of the butter, especially when the cream is thick and the weather hot.

2. That cream alone is more easily churned than a mixture of cream and milk.

3. That butter produced from sweet cream has the finest flavour, when fresh, and appears to keep longest without acquiring rancidity; but that the buttermilk, so obtained, is poor, and small in quantity.

4. That scalding of the cream, according to the Devonshire method, yields the largest quantity of butter; which, if intended for immediate use, is agreeable to the palate and readily saleable; but if intended to be salted, is most liable to acquire, by keeping, a rancid flavour. The process of scalding is troublesome; and the milk, after the removal of the cream, is poor, and often would be unsaleable from the taste it has acquired from the heating.

5. That churning the milk and cream together, after they have become slightly acid, seems to be the most economical process on the whole; because it yields a large quantity of excellent butter and the buttermilk is of a good quality—a point of some importance when buttermilk is largely used as an article of diet, as it is in Lancashire.

6. That the keeping of butter in a sound state appears to depend on its being obtained as free from uncombined albumen, or caseine, and water, as it can be, by means of washing and working the butter when taken from the churn.

II.—REMARKS ON CHURNING BUTTER.

BY MR. JOHN BALLANTINE, EDINBURGH.

The writer of this Essay has been an extensive dealer in Scotch butter for thirty years, and he is of opinion, that with the exception of sweet butter made in the neighbourhood of Edinburgh and Glasgow, there has been rather a deterioration than an improvement in the quality of Scotch butter during that period. There has been, however, a very decided improvement in the quality of the butter made of late years by the farmers in the places above mentioned, which is chiefly attributable to the method now adopted, of making the butter from the *entire milk*, by which the dairy farmer is enabled to carry on his operations in a regular and systematic manner, to churn the milk at exactly the proper period, to regulate the temperature, and, in short, to conduct the whole process on certain principles.

Experience has fully proved that butter is yielded in the largest quantity and of the best quality by the *entire milk*, that is, the milk from which the cream has not been separated. It is equally certain that the milk must likewise be kept till it has acquired a certain degree of acidity, in which state also it affords the best buttermilk—a point of very great importance in a district where it meets with a ready sale.

Being connected with a dairy farm of about thirty cows, situated twenty miles south of Edinburgh, the writer proceeds to give an account of the system successfully followed out at that farm.

In the summer season, the milk of the thirty cows is placed at the morning milking, in two zinc coolers of sufficient capacity, and allowed to remain there to cool till the evening. It is then drawn off by cranes or siphon into vats sufficiently large, not only to contain this quantity, but also the evening's *meal* or milking, which is mixed with it; and these vats are then put by, to stand totally undisturbed, till the whole acquires a sufficient degree of acidity. The time required for this purpose varies a little, according to the heat of the weather and the tempearature of the milk-house. The point is ascertained by the formation of a strong thick *brat* or scum on the surface, which then becomes uneven. The two succeeding milkings are treated in the same way, kept, of course, in separate vats, and, after standing for at least two entire days, the whole is put into the churns. By this method the dairy churns three days in the week. Some of the milk is thus a little longer kept than other portions, but this does not affect the quality of the whole. The milk of Sunday and Monday is churned on the Thursday morning; that of Tuesday, Wednesday, and Thursday morning, on the Saturday and Thursday evenings; and that of Friday and Saturday, on Monday morning.

The churn used at this dairy is the *plunge*, or *upright* churn, which is reckoned superior to either the barrel or box-shape. Two churns are employed, driven by a walking

beam with two arms, attached to the water wheel of the thrashing machine, and they work at the rate of thirty-eight or forty strokes in the minute. Should there not be milk enough for both churns, one can be used, and, by shortening the stroke of the churn-*staff*, it can be adapted to any quantity of milk, from 20 Scotch pints to 100; thus affording ample facility of churning at any intermediate time, when necessary. The milk being then carried in the vats from the milk-house to the churning-house, and put into the churns, as much hot water is added to it as brings the whole to the temperature of 65°. The churns are then set agoing, at the rate of thirty-eight or forty strokes in the minute, and this rate is continued till the *butter comes*, which requires from three to three and a half hours. The velocity of the wheel is then diminished by letting off part of the water, and the churns made to go very slowly, in order to gather the butter. When this is accomplished, the dairymaid gathers the butter from the churn with her hands, well washed and rinsed in cold spring-water, and carefully squeezes the milk out of it: it is then put into a vessel filled with fresh spring-water, well washed, and made up into half-pound rolls for the market.

In the winter season, when the cows are fed upon turnips, the system is changed—the coolers are dispensed with, and the morning's milk is carried from the byre and put into the churn, closely covered up. The same is done with the evening's milk, and, next morning, hot water is added to bring the whole to the temperature of 65°, and the churns set agoing. By this method, both the butter and the buttermilk are wholly free from any taste of turnips. The souring of the milk may be hastened by adding a little that is already sour. When butter is made from cream, the temperature required is only 55°, and the time occupied in churning does not exceed an hour and a half. Each meal of milk is put into coolers, not more than four inches deep, and allowed to stand for twenty-four hours. The milk is then drawn off by a siphon, and the cream, which is left on the bottom, gathered and put into a proper vessel; each gathering of cream is kept separate until it acquires sufficient acidity, when the whole is put into the churn and churned. In the winter season, hot water is added to bring the cream to 55° of temperature. Butter may be made from sweet cream, but it is neither good in quality nor large in quantity, and longer time is required in churning. It is an unprofitable method. On the whole, the writer is now fully persuaded, from an experience of thirty years, that the most profitable way of managing a dairy is that of churning from the entire milk in the way described. It possesses the great advantage of being adapted to any degree of temperature which usually occurs in this country, whereas it is often very difficult to operate with *cream*, which will not answer with a heat above 55°. One hundred gallons of entire milk will yield, in the summer months, five per cent. of butter more than the cream will produce, taken from the same quantity of milk. It is hardly necessary to add that the greatest care must be taken to keep all the vessels in the cleanest state. The method of salting the butter is of the greatest importance; very slight errors in this respect cannot fail to deteriorate the butter and greatly reduce its price in the market. As already observed, the butter made from *entire* milk, brought to a certain degree of acidity, is not only the best in a fresh state, but is best calculated for long keeping in a sound state when salted. The method of salting, as practised at this dairy, is as follows:—

The butter is drawn warm from the churn; and it is an invariable rule *never to wash it or dip it into water*, when intended to be salted. The dairymaid puts it into a clean tub, which is previously well rinsed with cold water, and there works it, with cool hands, till all the milk is thoroughly squeezed out. Half the allowed quantity of salt is then added, and well mixed up with the butter, and in this state it is allowed to stand till next morning, when it is again wrought up, any brine squeezed out, and the remainder of the salt added. It is then packed into kits, which, when full, should be well covered up, and placed in a cool dry store—a small quantity of salt is usually sprinkled on the surface. The proportion of salt used at this dairy is half a pound to fourteen pounds of butter, avoirdupois.* There are two great errors in the curing of butter in Scotland, which have caused its price to be lower than that of foreign cured butter, namely, using butter made from cream, which is often too long kept, and not salting it *immediately* from the churn. Much of the butter cured in Scotland is delivered in a fresh

* Dr. Traill observes that the proportion of salt which he recommends is half a pound to sixteeen pounds of butter, being rather less than the proportion recommended in this paper. Perhaps the difference may be explained by the quality of the salt, which, in Liverpool, is dry and fine. Salt for curing either butter or fish, should be purified from all admixture of potass or magnesia, and be perfectly dry. For butter, a fine-grained salt is preferred; for fish, a hard coarse-grained salt is the best. Mr. Ballantine states that he considers some part of the first salt is washed out in the shape of brine in working up for the second salting.

state by the farmer, and salted afterwards by the curer. Until the farmers shall learn to cure their own butter, the price of Scotch butter in the market will never equal that of foreign. This remark applies chiefly to the northern counties, the salt butter of which is selling at 84s., while foreign butter is bringing 100s. per cwt. in the London market. The writer of this paper sold upwards of five tons of butter, churned and cured as has been described, in the course of last year, at the rate of one penny or two pence per pound higher than that of any foreign butter in the markets here. The Clydesdale and west country butter is almost all consumed in the manufacturing districts, very little of it finding its way even to Edinburgh; and the butter made in this and contiguous districts being consumed here, little or none finds its way to the London market, otherwise there is no doubt but that it would be found fully equal to any foreign butter sold there.

If the Scotch farmers who supply the London market wish to obtain the top price, they must churn their butter from the entire milk, and cure it fresh from the churn in their own dairies.

It must be admitted, however, that, in situations where there is not a sale for buttermilk, this mode of churning will scarcely be so profitable as that from the cream, when, though the butter may not command the highest price, compensation will be made to the farmer by the cheese which may be made from the skimmed milk.

If any method could be discovered of making *cheese* from buttermilk, it would be of immense importance to all dairy farmers. This is a subject highly deserving of the attention of the Highland and Agricultural Society.

The two following tables may be taken as showing the aggregate results of many experiments in churning milk and cream:—

No. 1.—FROM ENTIRE MILK.

Season.	Temperature of the Churn when set.	Time in Churning.		Heat of the Churning-house.	Heat of the churn when Butter came.
		Hours.	Min.		
June, 1842.	65 Degrees.	3	30	60 Degrees.	68 Degrees.

No. 2.—FROM CREAM ONLY.

Season.	Temperature of the Churn when set.	Time in Churning.		Heat of the Churning-house.	Heat of the churn whenButter came.
		Hour.	Min.		
October, 1842.	55 Degrees.	1	30	54 Degrees.	59 Degrees.

CONCLUSION ON MEAT-MAKING.—That box-fed or shed-fed animals of good breed, fed on purchased food properly prepared, in addition to the utmost produce of the best grown crops which a thorough fertile farm can yield, will turn out more meat per acre than is possible by any other animals under any other circumstances. That land must be raised to the highest fertility which the cost of drainage or burning, or marling or liming, of manuring and cultivation permits—that it must then be made to yield alternately with grain crops, the best descriptions of Swedish and other Turnips, of Mangold Wurzel, of Carrots, of Clover, Vetches, Rape, or other green crops, which skilful cultivation can produce, and the best crops of each that cost and climate allow; that, with this produce, Linseed and, say, Beans, must be bought (or grown) for consumption in the proportion of 1 of the former, and about 3 of the latter, with every 100 of the green food; that this, properly prepared, must be given to good individuals of the short-horn, Hereford or Devon breeds of cattle, kept in clean, well-littered boxes, or to good individuals of the Leicester, South-down, long-woolled, or cross-bred breeds of sheep, in well-littered and well-sheltered sheds, before a maximum of meat can be expected.—*English Agricultural Society's Journal.*

SHOULDER LAMENESS.—If the lameness is really in the shoulder, bleeding in the arm and blistering the shoulder will be the best remedy, followed by sufficient rest. If, however, the pony puts his foot forwards in the stable, and does not rest upon it, the lameness is not in the shoulder, but the foot.—*W. C. S.*

ON REARING TURKEYS.

From Dixon's work on poultry we make the following extract. If not for old, it may contain hints for young housekeepers. It brings to mind much that we ourselves remember to have noticed in the habits of this valuable bird, and justly ridicules some foolish notions and habits in the treatment of turkeys, young and old. Let no one affect to despise information on such subjects, or, let those who are too proud to learn, refuse also to eat:—

"When the hen has once selected a spot for her nest, she will continue to lay there until the time of incubation, so that the eggs may be brought home from day to day, there being no need of a nest egg, as with the common fowl. She will lay from fifteen to twenty eggs, more or less. If there are any dead leaves or dry grass at hand, she will cover her eggs with these; but if not, she will take no trouble to collect them from a distance. Her determination to sit will be known by her constantly remaining on the nest, though empty; and as it is seldom in a position sufficiently secure against the weather or pilferers, a nest should be prepared for her by placing some straw, with her eggs, on the floor of a convenient out-house. She should then be brought home and gently and kindly placed upon it. It is a most pleasing sight to witness the satisfaction with which the bird takes to her long-lost eggs, turning them about, placing them with her bill in the most suitable positions, packing the straw tightly around and under them, and finally sinking upon them with the quiet joy of anticipated maternity. In the south of England from fifteen to twenty eggs may be allowed; but with the Norfolk variety, which is the smallest and in a northern or eastern country, it is found that moderation succeeds better than over-greediness of chicks. In this case thirteen eggs are enough to give her; a large hen might cover more; but few strong, well-hatched chicks are better than a large brood of weaklings that have been delayed in the shell, perhaps twelve hours over the time, from insufficient warmth. At the end of a week it is usual to add two or three fowls' eggs, 'to teach the young turkeys to peck.' The plan is not a bad one; the activity of the chickens does stir up some emulation in their larger brethren; the eggs

take up but little room in the nest; and at the end of the summer you have two or three very fine fowls, all the plumper for the extra diet they have shared with the little turkeys. Some ladies believe it necessary to turn the eggs once a day; but the hen does that herself many times a day. If the eggs are marked, and you notice their position when she leaves the nest, you will never find them arranged in the same order. A person who obtained 99 chickens from 100 eggs, took the trouble to turn every egg every day with her own hand, during the whole time of incubation. The result *appears* favourable; but, in fact, only amounts to this, that such officiousness did no harm with such a good, patient, quiet creature as the sitting turkey is, but it would probably have worried and annoyed any other bird into addling her whole clutch. We will at once reject, as utterly absurd and unnatural, all directions to immerse or 'try' the eggs in a pail of water, hot or cold. In four weeks the little birds will be hatched; and then, how are they to be reared? Some books tell you to plunge them in cold water, to strengthen them: those that survive will certainly be hardy birds. Sir J. S. Sebright exposes the folly of endeavouring to make young creatures robust by undue exposure to cold and hardship, an experiment which some men and women are cruel enough to try upon their own offspring. Air and exercise increases the strength of any growing animal, but cold and hunger only dwarf and weaken. We see robust children in extremely poor families, not because they are poor, but because, if they were not robust, they would not be alive at all. Sir John, in his 'Treatise on improving the Breeds of Domestic Animals,' pp. 15, 16, says: 'In cold and barren countries no animals can live to the age of maturity but those that have strong constitutions; the weak and the unhealthy do not live to propagate their infirmities, as is too often the case with our domestic animals. To this I attribute the peculiar hardiness of the horses, cattle, and sheep, bred in mountainous countries, more than to their having been inured to the severity of the climate; for our domestic animals do not become more hardy by being exposed, when young, to cold and hunger; animals so treated will not, when arrived at the age of maturity, endure so much hardship as those who have been better kept during their infant state.' Others say, 'Make them swallow a whole pepper-corn;' which is as if we were to cram a London pippin down the throat of a new-born babe. Others, again, say, 'Give them a little ale, beer, or wine.' We know, unhappily, that some mothers are wicked enough to give their infants gin, and we know the consequences. Not a few advise that they be taken away, and kept in a basket by the fire-side, wrapped in flannel, for eight or ten hours. Why take them away from her? She has undergone no loss, or pain, or labour: she wants no rest, having had too much of that already. All she requires is the permission to indulge undisturbed the natural exercise of her own affectionate instinct. Give them nothing; do nothing to them; let them be in the nest under the shelter of their mother's wings at least eight or ten hours; if hatched in the afternoon, till the following morning. Then place her on the grass, in the sun, under a roomy coop. If the weather be fine, she may be stationed where you choose, by a long piece of flannel list tied round one leg, and fastened to a stump or a stone. But the boarded coop saves her ever-watchful anxiety from the dread of enemies above and behind—the carrion-crow, the hawk, the rat, the weasel; and also protects herself (she will protect her young) from the sudden showers of summer. Offer at first a few crumbs of bread: the little ones for some hours will be in no hurry to eat; but when they do begin supply them constantly and abundantly with chopped eggs, shreds of meat and fat, curd, boiled rice mixed with cress, lettuce, and the green of onions. Melted mutton-suet poured over barley-meal, and cut up when cold; also bullock's liver boiled and minced, are excellent things.

Barley-meal, mixed thick and stiff with water or milk, nettle-tops, leeks, goose-grass, or cleavers, and many other things might be added to the list; but it is probable that a few of these may now and then be refused by some fanciful little rogues. I think I have observed that little turkeys do not like their food to be minced much smaller than they can swallow it; indolently preferring to make a meal at three or four mouthfuls to troubling themselves with the incessant pecking and scratching in which chickens so much delight. But at any rate, the quantity consumed costs nothing; the attention to supply it is everything."

Influence of Light on Plants, showing the necessity for early sowing of spring corn.—The influence of light on vegetation, and the mischief to young plants from too great exposure to its stimulating powers in their infant growth, is very clearly and beautifully presented to our observation, in the growth of Hyacinths, as seen in glasses, under different circumstances. Gardeners have found that to get strong self-supporting stems, and fine healthy flowers, it is necessary when the bulbs are first brought in contact with water, that they should be placed in the dark for three or four weeks. Whilst treated in this way, they make little shoot upwards—they are engaged in pushing strong roots down into the water. But great is the difference in those that are too early brought into the light; their progress upwards is much more rapid, but their stems will be weak and their flowers ill developed, and tumbling about from the inability of the drawn-out stalks to uphold them; and the whole plant shows the ill consequences of too excited a vegetation, and the want of support at the roots. In farming, I have had frequently to remark the same difference of growth, and the same debility of stem in the late sown corn, as compared with the earlier. The cuckoo sown Barley, deposited when the duration of daylight much exceeds the night, is known by its weak straw, and liability to be laid, and the inferiority of its grain. Late sown Oats are comparatively but as tailings to earlier sown, and Beans and Peas are still greater sufferers from too late sowing. In a word, the growth above ground of late sown corn, from the longer exposure to the stimulating effects of daylight, is too much for the lesser growth of the roots underneath. Farmers often suppose, because there is comparatively little difference in the time of appearance above ground, between January and April sowings, and the two harvest nearly together, that there must be but little progress making in the seed during the period it is not visible. But this is not so, as any one may see, by taking up seed sown in the depth of winter, a month or so after it has been deposited. I believe the earth in England is never so cold as to wholly prevent roots from making some progress. For I have noticed grain that has been sown immediately preceding a long and hard frost, on the frost breaking, to have put forth its radicles whilst it was bound up in ice; and so it is with trees, and hence the necessity for autumn transplanting of many shrubs which will not bear late moving. Now if roots were idle in the winter, where would be the difference in transplanting between October and February. To the advantage from winter sowing of Barley, now so much practised in Essex, Suffolk, and the eastern counties, I have before referred. On this subject the farmers of the south and west of England have much yet to learn. They frequently lose quarters an acre in their returns from not sowing sufficiently early. —*Hewitt Davis*, 3, *Frederick's place, Old Jewry, London, February* 16.

VINE BORDERS.—It is a very bad practice to turf them. If you must have something on them, then sow them with the more slender growing annuals, as Mignonette, &c., or plant them with verbenas; but they should never be cropped, if it can be avoided.

A NEW AND USEFUL MACHINE SUGGESTED FOR THE ATTENTION OF AGRICULTURAL IMPLEMENT MAKERS.

To the Editor of "The Plough, the Loom, and the Anvil."

Cleveland, 9th March, 1850.

J. S. SKINNER, ESQ.,—I have long had in contemplation a plan of a machine for excavating drains, but have never been able to make a trial, and don't think soon will—though draining in this country will never be extensively practised, unless we devise cheaper methods of performing the labour than has yet to my knowledge been discovered; and we have a great deal of land that is not worth much without. Oh! if we had applied to this and kindred subjects but a tithe of what is uselessly, yea, perniciously squandered by the government, agriculture would take such a start as has never been dreamt of. My plan of an excavating machine for drains would be something like a portable horse-power for threshing, having a horizontal cast iron fly-wheel, of some greater diameter than twice the depth of the drain, of the width and taper of the same, shod with diggers or cutters, and made to revolve at least fifteen hundred times in a minute, and to extend below the bottom frame as far as the depth of the drain to be cut. I think it would be best to make it cut in an upward direction, and there could easily be a fixture in front to make the dirt fall on one or both sides of the drain, leaving the drain perfectly clear behind. The forward motion could be given in many ways. I think friction wheels would be the best. The speed, I mean in a forward direction, could be regulated by a lever to suit the different degrees of hardness in the soil. This machine could be made to form the drain to suit any of the methods spoken of by Stephens in his "Book of the Farm," and if properly constructed, would cut through the hardest stone to advantage, if not too abundant.

If you have any faith in the above, please give my ideas to some of your wealthy and ingenious agricultural friends for consideration. And if the plan should be thought practicable, I will be pleased to answer any inquiries in regard to the minutiæ Yours, respectfully,

JOSEPH DYSART.

☞We have very strong faith in it, and hope some enterprising manufacturer will take up the idea and see what can be made of it. We once had some hope that Messrs. Norris & Brothers, the great steam-car engine manufacturers, would turn their attention to the practicability of some cheap portable steam engine for ditching. It is a great desideratum in our country, to find some cheap mode of cutting ditches and drains. Millions of acres of the very best land might be brought under cultivation, were it not for the expense of doing it by mere human muscular power. Mr. Dysart has liberally thrown his ideas before the public, and we hope they may be turned to account for the public good. If manufacturers needed only such an invention for results equally important to them, how surely they would accomplish it!—*Ed. P. L. & A.*

WHEAT DEGENERATING TO CHESS OR CHEAT.

I WAS astonished to see at this late day, the doctrine advanced that chess or cheat would not reproduce itself, and that it always is the product of degenerated wheat. In the Patent Office Report of 1848, p. 471, it is affirmed, that a peck of clean chess or cheat was seeded to test the principle, and that not one grain thereof vegetated, and hence the bold conclusion is arrived at, as above indicated. I should like to know how many pecks of wheat have been seeded, that have never vegetated, also how many of corn that have never seen the light. The hopes of the farmer are often blasted from defective

seed, and it is an unquestionable fact, that too little attention is paid to this important matter, and great loss is the inevitable result. It would scarcely seem necessary to controvert this strange doctrine in regard to the degeneracy of wheat, but such is the extensive circulation of the reports, and the consequence attached to them, that some notice should be taken of such a statement, to shield young and inexperienced farmers from committing so great a mistake.

An experience of some forty years has satisfied me, that this pest is as certain to vegetate as wheat or any other variety of small grain, and I opine that if such a doctrine as the above was advanced in this section of country, the author would be literally laughed at, and if he persisted in it, would be set down as certainly demented. There are some truly who still think that wheat will degenerate to darnel—for that is the name by which it is known in these diggings—but that darnel would reproduce darnel has never before been questioned. Some fifty years ago an old plain farmer, a firm believer in the degeneracy so called, affirmed that he could bring darnel back again to wheat, by attentive and judicious cultivation, and went to work to accomplish his object; accordingly, a fine rich square in his garden was duly prepared, and the seed carefully deposited—*it vegetated finally* and a great crop was produced, the grain considerably improved both in size and appearance; this gave him confidence, and he declared that in a few years, by sowing his improved darnel, the wheat would be there. He continued to sow, and to hand hoe:—well, such darnel was never seen in any country, so tall, luxuriant, grain of enlarged size; but it was darnel still, and no mistake. He continued the experiment for some years; and after certainly improving the quality of his darnel—for it was conceded on all hands that it was the largest ever seen—he gave it up in despair, and abandoned his notions about the degeneracy of wheat, as, in my humble opinion, all thinking men ought to do. It is against the order of nature, for she moves by certain fixed laws, about which there is no shadow of change.

The undersigned has been a quiet cultivator of the earth for some forty years, and when he commenced operations, his farm was filled with cockle and darnel; hundreds of bushels were for many years blown out by the fan and passed through the screen-board: the utmost pains were taken to get clear of these pests, and although vastly diminished, they were still to be found in the wheat, and affecting, to some extent, the sample for sale. Even in the famed year of 1816, when wheat was certainly more perfect and beautiful than ever seen before or since, the darnel was present: in that year degeneracy was impossible, for there was not even a particle of rust on the wheat. Three years ago this pest disappeared, nor have I seen it since in any fields, and so also the cockle. But how has this thing been accomplished? I will tell you—I had seen advertised by Sinclair & Co. an implement called the cylindrical screen, which would separate all filth from wheat; and so it will, save garlic of equal size with wheat. By purchasing one of these implements and passing all my seed-wheat through it, my crops are now perfectly clean; in fact, I have ceased to use it, and would cheerfully dispose of the article at a reduced price, for as I sow no filth I reap none, and the implement is now useless to me. Perhaps the reader may imagine that the statement above made respecting the attempt to convert, or bring back darnel again to wheat, is a mere figment; but let me declare with honest sincerity and truth, that the statement may be relied on. Many things have been published to stagger belief on this heretofore much vexed question—indeed, before I had taken the pains to investigate the subject, I was inclined to the opinion myself; but all doubt has long since vanished from my mind. I could state other facts, but deem it useless; it would be occupying space in your columns which may be far better employed.

AN OLD FARMER.

Directions as to the Quantities of Guano and Ground Bones necessary for any given space of ground.—As guano and crushed bones are getting more and more into use, and will no doubt become permanent applications, from the experience that has already tested their high utility, the following tables have been carefully constructed for the purpose of preventing possible waste, and assisting ploughmen and others who have little time for minute calculation. As regards the manures named, the tables annexed are intended as a sort of ready reckoner, which, by simply leaving out fractional parts, show at a glance how much of each will be required by the yard, drill, rood, or acre, no matter how extensive the fields cleaned and dunged for green crops.—*Taken from an English paper.*

TABLE, *showing the quantity of Guano required to be sown in a certain number of yards, equal to* 1 *cwt. to the acre, in drills from* 36 *to* 22 *inches apart.*

IMPERIAL STANDARD MEASURE.

Distances of Drills in inches apart.	No. of the Lineal Yards in the Imperial Acre.	Length of yards for lbs. equal to 1 cwt. of Guano.
36	4840	43
35	4978	44
34	5124	45
33	5280	47
32	5445	48
31	5620	50
30	5808	51
29	6008	53
28	6222	55
27	6453	57
26	6701	59
25	6969	62
24	7260	64
23	7575	67
22	7920	70

EXAMPLE.—Suppose the drills to be 36 inches apart—1 lb. of guano to 43 yards is equal to 1 cwt. per acre; 2 lbs. to 43 yards is equal to 2 cwt. per acre, and so on; every pound for 43 yards being equal to 1 cwt. per acre.

TABLES, *showing the Distance a Bushel of Bones will reach in Lineal Yards, from* 10 *to* 25 *bushels per acre, in drills from* 36 *to* 22 *inches apart, in Imperial Measure.*

Distance of Drills in inches apart.	No. of the Lineal Yards in the Imperial Acre.	QUANTITIES PER IMPERIAL ACRE.															
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
36	4840	484	440	403	372	345	320	302	284	268	254	242	230	220	210	201	193
35	4978	497	452	414	382	355	331	311	292	276	262	248	237	226	216	207	199
34	5124	512	465	427	394	366	341	320	301	284	269	256	244	232	222	213	204
33	5280	528	480	440	407	377	352	330	310	293	277	264	251	240	225	220	211
32	5445	544	495	453	418	388	363	340	326	302	286	272	259	247	236	226	217
31	5620	562	510	468	432	401	374	351	336	312	295	281	267	255	244	234	224
30	5808	580	528	484	446	416	387	363	347	322	305	290	276	264	252	242	232
29	6008	600	546	500	462	422	400	375	353	333	316	300	286	273	261	250	240
28	6222	622	565	518	478	444	414	388	371	345	327	311	296	282	270	259	248
27	6453	645	586	537	496	460	430	403	379	358	339	322	307	293	280	268	258
26	6701	670	609	558	515	478	446	418	394	372	352	335	319	304	291	279	268
25	6969	696	633	580	536	497	464	435	409	387	366	348	331	316	303	290	278
24	7260	726	660	605	558	518	484	453	427	403	382	363	345	330	315	302	290
23	7575	757	688	631	582	541	505	473	445	420	398	378	360	344	329	315	303
22	7920	792	720	660	609	562	528	495	465	440	416	396	377	360	344	330	316

I have often thought of sending you the annexed tables, which were prepared for me soon after I first began to use guano, and which I and numerous friends to whom I gave a copy have found most useful. I doubt not that many of your agricultural readers would be thankful for the information they contain.

HONOUR TO WHOM HONOUR IS DUE.

WILL some one send the names of the legislators in Maryland, to whom was referred the very strong memorial, published in the "*American Farmer*," for February, praying legislative enactments to abate the scandalous grievance so long endured by the farmers of that state, from *pestilent sheep-killing dogs?*

The loss sustained, in being thus restrained from the enjoyment of abundant means for increasing their flocks of sheep, was demonstrated, in that memorial, to be little, if any, under half a million of dollars—enough, or nearly so, to pay the interest on the state debt, heavy as that is. Now, it is but fair that the working members, who may have yet more clearly illustrated this crying evil by their report, and secured the abatement of it, by appropriate and wise legislation, should have *their names distinguished*, at least in the agricultural annals of the state; for, although, be it admitted, prompt and efficient attention was but an obvious duty, in such a case, so presented—no more than it is customary for all parties to *promise*, when soliciting the suffrages of the *dear* people; still, the promises made *before*, are so often disregarded *after* men are elected, that, as to those who do act faithfully up to them, it is well, as a matter of public policy, if not of public justice, to hold up their names conspicuously, and challenge for them the public esteem!

As this well drawn memorial was prepared at the instance of the "*Maryland State Agricultural Society*," it will, doubtless, at its meeting, on the 1st May, at Baltimore, call for a *report from its committee*, to the end that the society may pass a vote of thanks to the legislative committee, or otherwise take such measures in the premises as will insure respect for its own patriotic suggestions, and ample justice to those in authority, *according to their merits*, and of *whatever party they may be*. Were it possible for the society to fail in doing so, which we will not believe, the people might begin to inquire—for what use has a society been incorporated under the name of the "State *Agricultural* Society?"

For "The Plough, Loom, and Anvil."

CALENDAR OF OPERATIONS.

SPRING appears now in all its beauty after a very cold, wet, and changeable opening—the thermometer frequently indicating 7° (Fahr.) of frost, and ice making three-quarters of an inch thick in the shade, which, however, has done no damage to our fruits in this vicinity, though they may have suffered in more southern latitudes. The vegetable garden has made no progress. Radishes and peas are up. Cabbage and lettuce begin to grow. All our early crops are sown. Sow peas, spinage, Indian lettuce, and yellow and white summer radish for a succession. Plant snap-shorts, or Valentine beans; if any were above ground, and have been cut off with the frost, do not fret over them, but plant again. The Mohawk bean is the hardiest, the speckled Valentine the best, and continues longest in use. A small planting should be made every two weeks till August. Prepare ground and poles for Lima beans; make the hills about four feet apart, or, if only a single row is planted, three feet will be enough; give a good shovelful of manure to each hill; place thereon poles seven feet high, and plant four to six beans on each hill with the eye downward; they do not succeed in wet ground. A vegetable garden is extremely deficient without its patch of Lima or butter bean; it is indispensable in its season, and may be used throughout the year by every housekeeper. Sow beets (salsay, or vegetable oyster), parsnips, late cabbage, and carrots, for a full winter supply; if ground is scarce, early horn carrots, early blood and turnip beets may be sown on ground from where early peas and radishes have been taken as late as the end of June. Prepare ground for tomatoes, which, by the by, is a crop which requires no manure, except on poor sandy soil. There are several varieties of this favourite vegetable. The yellow and pear-shaped have fewer seeds than the large red, and, by many, are preferred on this account; except in flavour, we can perceive very little difference; the large smooth red tomato is most generally

cultivated. We desire also to call attention to the radish beet—a very long dark blood beet, which, if sown any time in May, makes a winter beet of the very best quality, being dark in colour and tender in flesh; if sown early to keep over winter, it is hard and thready; indeed, any winter beet will get hard if sown early in spring. Put in a full crop of cucumbers and bush squash. Nurse up your egg-plants and peppers till the cold nights are fairly over.

Sow a full crop of water-melons and cantelopes as soon as the ground is warm. They delight in light sandy soil; place two shovelfuls of short manure in each hill; if the bug offers to depredate on the crop, sprinkle the leaves early in the morning with plaster, air-slaked lime, or wood ashes. The best water-melon is the mountain sprout, or mountain sweet. These have the preference in our market, and are superior to the Carolina or Spanish.

Sow endive for a full crop, and prepare ground for early celery; it does well between the rows of late peas; do not overlook a succession of extra early, and sugar corn in rows one foot from plant to plant, and two and a half feet from row to row. Where fruit-trees have been planted and not fully cut in, do so at once; do not be sparing of the knife; prune back to one or two eyes from the wood of the preceding year. The trees will form finer heads, and be much more certain of growth. Make your strawberry-beds with care and without delay; dig or plough deep; if you trench or sub-soil, so much the better, though we are not so sanguine on this point as we are in using plenty of stable manure—poudret or guano, of the latter at the rate of four cwt. to the acre. Our bed is two hundred feet long, and twenty wide, and we see none to beat it. There are sixteen sorts of strawberries, one-half are not worth their room, and will only keep it one season longer. We gave a list last month of our favourites. (For *Bean Pine* read *Burr Pine.*)

November is the best month for planting in the Southern States. For market, we believe there is no crop equal to this favourite fruit for a profitable return.

☞ Good gardening consists of digging deep and manuring well, cultivating freely and destroying every weed. It is no garden that is full of weeds, and a poor garden that is not full of crop. Every variety of annual seeds should be sown without delay; thin them out when up; their beauties will be more fully developed by an occasional watering with guano, *at the rate* of one pound to five gallons of water; its fertilizing properties are astonishing, and the Peruvian is one-third stronger than the Patagonian.

ON THE CULTIVATION OF MANGOLD-WURZEL.

BY WILLIAM MILES, M. P.

To Ph. Pusey, Esq., M. P.

DEAR PUSEY:—Notwithstanding the favourable result of Lord Spencer's experiment with mangold-wurzel, the consideration will naturally suggest itself to the mind of the farmer, previously to his adopting the cultivation of this root, whether, although the mangold-wurzel may bring on his cattle faster and better than the Swede turnip, it is not more difficult of culture, more tender in its habits, and less productive in bulk per acre than the Swedish turnip; and I think, therefore, it may not be unprofitable to lay before the readers of the Journal first, the chemical analysis of the highest and lowest order of turnip and of mangold-wurzel, as given by Sir H. Davy, and of the sugar-beet and orange-globe mangold-wurzel, as lately obtained on the same plan by the celebrated Bristol chemist, Mr. Herapath; and then to point out

the system adopted by myself in the West of England in the cultivation of mangold-wurzel, which has been attended with complete success.

Roots. Species.	Quantity of Nutritive Matter in one thousand parts. Mucilage or Starch.	Saccharine Matter or Sugar.	Gluten or Albumen.	Extract.	Total Soluble or Nutritive Matter.
Swedish turnip	9	51	2	2	64
White turnip	7	34	1	—	42
Mangold-wurzel	13	119	4	—	136
Orange-globe	25¾	106¾	1½	less than 1	135½
Sugar-beet	17¾	126¾	1¾	1	146¾

By this table it is apparent that equal quantities of Swede turnip and orange-globe mangold-wurzel contain very different proportions of nutritive matter, the latter more than doubling the former in quantity; and should the mangold-wurzel be of equally easy culture with the Swedish turnip, it seems almost unaccountable that it should not yet have come into more general cultivation. I have grown the common red sort for six, the sugar-beet for four, and the orange-globe for three years; these kinds have regularly come into course with Swedes upon light land; the product has always been equal, in most cases far heavier. The Swede turnip has enemies innumerable; I have never observed the mangold-wurzel attacked either by fly, slug, or wireworm. Equally a cleansing crop with the Swede, it stores better, and lasts good for a longer period. In the summer of this year I was using sugar-beet with stall-fed cattle, which cut perfectly good and crisp in August. The mode of culture I adopt up to depositing the seed in the ground is the same as that adopted in Northumberland for ridging the Swede; great care, however, must be taken that the seed of the mangold-wurzel is not buried too deep, or it will not vegetate. Dibbling, as you never can ensure an equal depth, does not answer; nor does the seed drill well, if properly prepared by steeping, which I should recommend, for at least twenty-four hours before planting. To ensure, therefore, a proper depth, I have been in the habit of using an iron wheel, round the outer circumference of which, eighteen inches apart, iron points project, broad at the base and tapering towards the point, about 2½ inches long; this is wheeled upon the top of the ridge, the man walking in the furrow, and thus holes are formed which can never run into the excess of too great depth, and into which the seeds are deposited by women and boys following the wheel, and generally covering the seed by drawing the foot as they advance at right angles with the ridge over the holes; the roller follows, and thus the sowing terminates. One man with the wheel will keep six persons well employed in depositing the seed after him. This system was recommended me by my friend Mr. Webb Hall, and since I have adopted it my crop has never failed.

The after culture to the storing is similar to that of the Swede; great care, however, should be taken in never permitting two plants to grow in the same spot, which will be the case frequently, should only one capsule even be deposited in each hole, as every capsule contains many seeds. Should the tops remain uncut, the plant will stand a considerable degree of frost; it should, however, be stored early in November; the best and cheapest method is to build it up against some high wall contiguous to your beast-sheds, not more than seven or eight feet deep, carried up square to a certain height, and then tapering in a roof to the top of the wall; protect the sides with thatched hurdles, leaving an interval between the roots and the hurdles, which fill up with dry stubble, cover the roof with about a foot of the same, and then thatch it, so as to conduct all moisture well over the hurdles placed as a protection to the sides. In pulling the plants, care should be taken that as little injury be

inflicted upon them as possible; cleansing with a knife should on no account be permitted, and it is safer to leave some of the leaf on than, by cutting it too close, to impair the crown of the root. The drier the season is for storing the better, although I have never found the roots decayed in the heap by the earth, which in wet weather has been brought from the field, adhering to them. As to the productiveness of the different sorts, in one year I have grown a larger quantity of sugar-beet per acre, in another of mangold-wurzel; both these, however, I consider exhaust the land in a greater degree than the Swede; but I have formed a very high opinion of the orange-globe, though not so large a producer generally as the two other sorts; it appears always to throw at least two-thirds of its weight above ground; neither is its tap-root larger nor its fibrous roots greater than those of the Swede turnip. Care should be taken in giving cattle every species of this root, as, if taken in excess, it is apt to scour; indeed, from the avidity with which cattle eat the sugar-beet, and from its viscous properties when quite fresh from the ground, it should be stored so as to come into consumption the last of the roots.

In feeding store cattle, I should commence with Swede turnip, proceed with the orange-globe, then with mangold-wurzel, and finish off with the sugar-beet; thus not only frequently varying the food, but using them in the order corresponding exactly with the nutritive matter contained in each description of plant. I have found, indeed, equally with Lord Spencer, that it will not do to return from any sort of mangold-wurzel to Swede turnips, as even beasts in the straw-yard have for two or three days refused such a change. I may add that the earlier in April your mangold-wurzel is sown the better, the deeper the tilth the greater probability of a heavy crop; but that although both the mangold-wurzel and sugar-beet require a deeper and stronger land than the Swede turnip, yet that the orange-globe will flourish wherever the latter will succeed.

These are the details of the system I adopt as regards this root, and I shall be glad if I should prevail upon those who have not yet tried the culture of it to grow a small quantity, assured as I am that for certainty of crop and feeding properties the mangold-wurzel will not deceive expectation.

Yours truly, W. MILES.

Kingsweston, Nov. 1, 1841.

WHAT CAN BE DONE ON ONE ACRE OF GROUND.—The Editor of the *Maine Cultivator* published, a few years ago, his management of one acre of ground, from which we gather the following results: One-third of an acre in corn usually produces thirty bushels of sound corn for grinding, besides some refuse. This quantity was sufficient for family use, and fattening one large or two small hogs. From the same ground he obtained two or three hundred pumpkins, and his family supply of beans. From a bed of six rods square, he usually obtained sixty bushels of onions; these he sold at $1 per bushel, and the amount purchased his flour. Thus, from one-third of an acre and an onion bed, he obtained his breadstuffs. The rest of the ground was appropriated to all sorts of vegetables, for summer and winter use; potatoes, beets, parsnips, cabbage, green corn, peas, beats, cucumbers, melons, squashes, &c., with fifty or sixty bushels of beets and carrots for the winter food of a cow. Then he had also a flower garden, raspberries, currants, and gooseberries in great variety; and a few choice apple, pear, plum, cherry, peach, and quince trees.

Some readers may call the above a "Yankee trick." So it is, and our object in publishing it is to have it repeated all over Yankee land, and everywhere else. If a family can be supported from one acre of ground in Maine, the same can be done in every state and county in the Union.—*Ex.*

Table showing the average monthly wages of agricultural labourers; the average weekly wages of females engaged in domestic service; and the average daily wages of mechanics in the twenty States respectively mentioned: from the Patent Office Report of 1848.

	Agricultural, per month. Male.	Domestic, per week. Female.	Mechanics, per day.
Me.	$12	$1 to $1 50	$1 to $1 50
N. H.	13	1 45	1 25
Vt.	12 50	1 08	1 25 to 1 50
Mass.	13 50	1 50	1 25 to 2 50
N. Y.	11 50	1 12½	1 25
N. J.	11 82	1	1 44
Penn.	9 66	1	50 to 1 50
Md.	10	1 25	87 to 1 00
Va.	9 44		1 25
Ga.	8 33	1	1 25
Ala.	10	1 50 to 2 00	
Miss.	10	2	
Tenn.	8	1	75 to 2 00
Ky.	15	1 87	1 to 1 80
Ohio	10 80	96	1 to 1 25
Ind.	10 95	98	1 32
Ill.	10 45	95	1 50
Mich.	11 30	1 25	1 50
Iowa	13	1 25	1 00
Texas	12		1 to 3

In the several slave States mentioned, we presume the prices given for female domestics are meant for coloured servants. In South Carolina, mechanics are said to receive $200 per year. In Alabama, $30 per month and found. In Mississippi $35 to $40.

From these data, we are of the opinion that the prices of agricultural labour in the United States average about $10 62 per month, or say $125 per annum and found; the wages of female domestics in free States average $1 15 per week, or $60 per annum and found; and the wages of mechanics, say $1 25 per day, exclusive of board.

It will be understood that besides these wages, the hireling is found in bed and board, as good as any man in any circumstances need desire.

In England, the country with which we have chiefly to compete in manufactures, if we would diversify our labour, and work up our own materials of comfort and independence, the agricultural labourer gets $1 50 to 1 75 per week; out of which he has to pay house-rent, fuel, clothes, provisions, schooling and all for his family. Now our policy would be not to depress our labour to the level of theirs, but by keeping up American labour, and with it the power of consumption of the farmer's products, draw immigrants in shoals to our country, and so raise the price of labour abroad—as would elevate them towards our standard instead of depressing our labour to theirs. It would prevent them from underselling us with their manufactures, and with more exemption from the policy of British merchants and manufacturers, every American interest would be benefitted. ☞ *Our people are beginning to see this.*

It is altogether a gross error to suppose that the American farmer is to be benefitted by depressing to a low point the compensation to the agricultural labourer. A good and beneficent Creator never designed that any great interests should thrive on the poverty of the mass of the people. When that does happen—that the few fatten on the miseries of the many—we may be assured it is by one of those "inventions" of which Scripture tells us, man has found out so many.

LITERARY NOTICES.

MISS LESLIE'S NEW RECEIPT-BOOK, AND USEFUL GUIDE FOR LARGE OR SMALL FAMILIES.—At the head of the list of judicious and good people, who despise all humbuggery, we would place the authoress of this work; whereof, the copy before us, published by A. Hart, late Carey & Hart, is the third edition, enlarged.

As it may not yet for some time reach its ultimate destiny, in the housekeeper's room of every well-managed family, we give a little table, which conveys the practical information to show that the common saying that "a pint is a pound," is a common story teller.

Weight and Measure.

Wheat flour,	one pound of 16 ounces	is one quart.
Indian meal,	one pound two ounces	is one quart.
Butter, when soft,	one pound one ounce	is one quart.
Loaf sugar, broken up,	one pound	is one quart.
White sugar, powdered,	one pound one ounce	is one quart.
Best brown sugar,	one pound two ounces	is one quart.
Eggs,	ten eggs weigh	one pound.

LEAVES FROM THE NOTE BOOK OF A LOUISIANA SWAMP DOCTOR: By Madison Tensas, M. D., Ex. V. P. M. S. U., Ky, Author of "Cupping on the Sternum." With original designs by Darley. Philadelphia: A. Hart, late Carey & Hart.

The readers of the *Spirit of the Times*, whose name is legion, will have seen enough of amusing anecdotes from this work to make them wish for "more of the same sort." Why, the very thought of the scenes which must pass in review before a "Louisiana Swamp Doctor," is enough to provoke the curiosity of a stoic or Indian.

DE BOW'S NEW ORLEANS COMMERCIAL REVIEW OF THE SOUTH-WEST for April is before us. Strong in its original appearance, this work has gone on accumulating force, and variety, until it has become indispensable to all who would understand and keep way with the vast progress in the growth of a country, whose wealth and power are increasing beyond all example in the history of human population and industry.

ENCYCLOPEDIA OF CHEMISTRY.—No science has made greater progress, enlarging the field of discovery, and applying its discoveries to useful ends—than chemistry. Of this work, just published by Henry C. Baird, Esq., successor to E. L. Carey, it ought to be enough to say that Professor Hare pronounced such a work to be much needed, anticipated the best results from "the well known ability of its authors;" and that in a review by Professor Silliman he says, "We have no hesitation in giving this work the most unqualified recommendation."

Without pretending to ability to judge of its merits *per se*, or by comparison, the testimony of such men would, with us, put the merits of the work beyond all question.

SYLLABUS OF CHEMISTRY.—The same respectable and enterprising bookseller has published SYLLABUS OF A COMPLETE COURSE OF LECTURES ON CHEMISTRY, including its application to Arts, Agriculture, and Mining, by *Professor E. Solly*.

It is designed to occupy and we doubt not will well fill a vacant place in the library of chemical text books; being, as the American editor says, admirably adapted to the wants of both teacher and pupil. The public is under the greatest obligation to those who thus anticipate or supply its wants of scientific works, as we apprehend that they are less remunerative than many of which, it may be said, their morality is in an inverse ratio to their popularity.

THE PETREL.—Mr. Peterson, 98 Chestnut street, has presented in this story of love on the ocean, something at once fresh and refreshing. There is, in fact, something peculiarly wholesome in marine air, hence, for wild animals whose natural *habitat* is beyond its reach, nature provides "licks," and the herdsman salts his cattle. These tales of the sea have a peculiar zest for landlubbers as well as ladies, when they are well told, as is this of *The Petrel* by Admiral Fisher.

A TREATISE ON GRAPE CULTURE IN VINEYARDS has been received and read with particular interest. If we had not given an article of much value in our last, from the same pen, we should publish the essay contained in this pamphlet; but there is in it much besides from which to get materials for the gratification of our readers, when we can command the space. The difficulty is not to get matter, but to decide what shall be postponed when all is good.

THE READER, if inclined to find fault with the number of pages, in this number, given to the political economy of agriculture, will please take notice that the supplement on iron, is that much added to what we bargain for, and for which no charge is made.

SUPPLEMENT

TO

THE PLOUGH, THE LOOM, AND THE ANVIL.

ON THE IRON INTERESTS OF THE UNITED STATES—APPEAL TO CONGRESS.

THERE is not a cultivator of the soil, nor man whose welfare is connected with its products—nor is there a legislator or politician who is not concerned in the subjects discussed in the following papers. To the Farmer and Planter it is much more important to know, whether we should make our own or whether we should import our iron, than it is to be told, how to enrich an acre or to fatten a bullock. Insure him a market for corn and beef, and he will be sure to learn how to make his land produce both the one and the other. The great question for them, is the policy which will insure, in the long run, the most remunerating market. In every aspect it is one of the deepest interest. The very use or non-use of iron is the great characteristic mark of distinction between a state of civilization and a state of barbarism. In the progress of the arts this rude and impracticable material has been made more and more ductile, placable, and subservient to the convenience and embellishment of society. The more extended use of it at once indicates and accelerates the progress of social refinement: the very iron pen before us, with which we are tracing these lines, demonstrates the mastery of science over matter. And to this mastery nothing has more contributed than iron itself. To all other elements of national power and aggrandizement for our country, Providence added bounteously *coal, lime, and iron;* but in the wise policy of some, we are told that we must forego the use of a material, above all others essential to national independence, unless we consent to depress the labour employed in its manufacture, to a condition of existence like that of the common labourer of European countries, which beggars all power of description, and sickens the heart to contemplate. Before freemen will submit to it, they would cultivate the earth with wooden ploughs, as of old, and become the rivals instead of the customers of the farmer. However, we will not anticipate the arguments contained in these papers, to the strength of which we could add nothing except by contrasting with them ours of so much less force.

After all it is mostly for the use of the Farmer and the Planter that iron is made; let them, therefore, read dispassionately, and judge for themselves whether it shall be made abroad by men who have little capacity to buy the products of the plough and the pasture, or at home by men who would have much capacity to consume the products of both.

MEMORIAL.

To the Senate and House of Representatives of the United States of America in Congress assembled:

YOUR Memorialists, interested in the manufacture of iron in the State of Pennsylvania, ask leave to offer some considerations and statements suggested by the suffering condition of that industry. We are not unaware of the prejudice which exists in the minds of many against the propriety of the government giving any attention to the grievances of manufacturers; neither are we ignorant of the grounds of this feeling.

It is a part of our purpose in this memorial to lessen, if we cannot wholly remove, this prejudice. On a subject of such importance, involving so many interests, in a country so extended as ours, it is to be expected that honest

differences of opinion will exist, and sectional, if not clashing, claims will arise. The manufacturers of this country, whatever may be their troubles, must yield with all their fellow-citizens to that system of compromise on which all our institutions are adjusted. We cannot ask any legislation for our advantage unless it be, if not equally for the benefit, at least not injurious to the rest of the community. On this ground we are willing to base our present application for relief. We come, without distinction of party, and ask to be heard upon strictly national considerations, that, if any enactment is consequent upon our petition, it may be regarded as permanent and not partial legislation. We ask not for relief to-day which may be withdrawn to-morrow; but for a settled policy. We ask to have the wisdom of all interests and all parties applied to the preparation of such a system as will be permitted to stand, subject only to the improvements which experience and time may dictate.

It cannot be questioned, that a large supply of iron is necessary to the rapid progress of any country in all departments of industry and the arts, in civilization and the material well-being of the people. The production of iron in Great Britain is equal to that of all Europe besides; while her consumption is equal to a million and a third of tons, or about 100 lbs. to each individual of the whole population. Belgium falls little, if any, short of an equal consumption for each inhabitant. Sweden would stand next in order but that she exports so much of her iron as to remain far behind Belgium in proportionate consumption. France consumes about 30 lbs. for each person, and of this, about one-tenth is imported. The rest of Europe does not consume 10 lbs. each person, and the remainder of the Old World does not reach a consumption of 5 lbs. In this respect, the enterprise and industry of the people of the United States have not permitted them to remain behind; so that, despite of obstacles the most formidable, and the most vacillating legislation, we stand in the front rank of nations as to the consumption of iron. Our consumption is equal to that of Great Britain for each inhabitant; but we import about two-tenths of the quantity consumed. Such is the abundance of raw materials, such the enterprise of our people, such the tendency to employ iron, and so greatly are the facilities for transportation multiplying, that we might with certainty outstrip the world in its production. All that is needed to secure such a result is a steady home market. Pennsylvania now produces as much iron as Great Britain did in 1820; her product has doubled in ten years, under great disadvantages, and in ten years of favourable legislation, it might be doubled again. Pennsylvania now produces as much iron as France; more than Russia and Sweden united; and more than all Germany. Yet how many States of the Union will ere long manufacture as much as Pennsylvania, for there are few in which the raw materials do not abound. Our population is destined to increase in a very rapid ratio; under a wise policy the production of iron would far more than keep pace, until we should be finally as much distinguished for the consumption of iron as we now are for the production of cotton.

The policy of purchasing only in the cheapest market sends not only the people of the United States, but of all the Continent of Europe, and in fact of all the world, to Great Britain for iron; for there the cost of making is one-half less than here, and in still greater disproportion with most other nations. The difficulty is that the manufacturers and merchants of that country are not governed by the cost of production in selling their commodities, but by the extent and urgency of the demand. When there is a demand, the prices are at the highest; when there is not, the world is invited to a cheap market.

If it be objected to such a development of the manufacture of iron, that the cost of production is too great in the United States, and that we ought rather

to import that which is purchased cheaper in other countries; the reply may be made that, Great Britain being the only country in which iron is sold at lower rates than here, our demand could only go to that market; that if sound economy requires us to obtain our supply of iron in Great Britain, the same motive would send all other nations to the same market. But our orders alone could not be filled without so raising the price as to preclude all possibility of our obtaining a full supply. If we should order from Great Britain in one year, additionally, half the quantity of iron we now manufacture, prices would go higher than they have been for a century, in England or America. The British iron market is cheap when you refrain from it, not when you press upon it. The cost of manufacturing iron is far from being the only, or even the chief, controlling element of the price. The manufacturers and holders of iron in Great Britain are extremely sensitive to a demand for any increased quantity of iron or to any increased urgency of demand, whether from abroad or for home consumption.

A million of tons of iron, which is the amount of our consumption when the industry of the country is suffering under no depressing causes, would have cost in Great Britain, in 1843, at the prices then prevailing, (taking half the amount of pig and half as bar iron,) £3,500,000 sterling. In 1846, the same quantity would have cost £9,000,000 sterling, at which price it was more economical to manufacture than to import. These high prices gave an immense impulse to the production of this country, and showed how promptly capital and enterprise combined to overcome an emergency by which the country was threatened with a deficiency of the indispensable article of iron.

Had we even a stipulation, by treaty, on the part of the government of Great Britain, that we should always be furnished with iron in that market at the low rates now current, say a million of tons for $20,000,000, how could we pay for it? We already import more than we can pay for in exports.

All the shrewdness and enterprise of our merchants are constantly at work to increase our exports; not only is everything exported that will pay a profit, but every article that will pay a freight. How absurd to suppose we could pay $20,000,000 additional for iron! Any attempt to supply ourselves with iron from abroad would, if persevered in, reduce our consumption from 100 lbs. for each person to far less than half that quantity, besides abridging our imports of other articles, and wholly deranging our foreign commerce.

As manufacturers of iron, we freely admit that we enjoy in Pennsylvania, and, we may add, in all the United States, very manifold natural advantages. If we could now boast that exemption from injurious rivalry enjoyed by the British manufacturers during the rapid growth of their industry, we could safely promise even greater results than have been witnessed elsewhere. Look, for a moment, at the circumstances under which the British manufacture of iron was developed. There was no surplus of pig iron in any country of Europe, and the article was unknown in European foreign commerce. All that England ever imported was a few thousand tons from the colonies of Pennsylvania, Maryland, and Virginia, and this was finally cut off by our Revolution. The English manufacturer of pig iron had no rival, and required no protection. The only competitors in bar iron were Russia and Sweden; their prices, from 1780 to 1849, ranged from £12 to £25 per ton. But as if this high price was not ample protection to British manufacturers, the government advanced the duties fifteen times between 1780 and 1820 without one reduction, increasing them from £2 10 to £7 per ton, affording the double protection of high prices and constantly increasing duty.

Between 1780 and 1825 Russian and Swedish bars could not be imported and sold in England for less than £20 or $100 the ton; this gave the English

manufacturers entire possession of the home market for all purposes to which their iron was applicable, and yet their price was always below the foreign.

In contrast with this, the American maker of bar iron competes with rivals whose average home price is only £8 or $40 the ton, and who, at present rates of iron in the British markets, and duties here, can put their bars in our market at $40, duty paid. It is true, they lose money by the operation, but they would lose more by selling at home and thus further depressing the markets in which they must sell three times as much as they export. Thus they preserve their own, and ruin the markets of their competitors. During the rise of this manufacture in Great Britain, pig iron was worth in their market over 100 shillings, generally 120 shillings. The American manufacturer encounters pig iron sold in Scotland for years together at from 35 to 45 shillings, and which can now be put down in our markets, duty paid, at 60 to 70 shillings.

If we ask relief against such ruinous competition, we derive countenance from the fact, that British manufacturers constantly appealed to their government for protection under the favourable circumstances we have noted. We have seen with what success. The time was not long until, in 1825, the manufacture having attained ample growth and power, it could dispense with all aid, and defy competition. Great Britain had then risen to the rank of the largest consumer of iron in the world.

If this business has been overdone in Great Britain, the evil consequences have fallen upon the manufacturers. The public has enjoyed an immense advantage in the abundance of a material so important in every department of industry as iron. The fluctuations in price which have ensued from this large production have been of late years so great as to cast in the shade all other commercial changes of price. The range of these fluctuations in pig iron during the last ten years is from £1 18s. to £5 12s. 6d., and in bar iron £4 10s. to £13, or about 200 per cent.

In one extremity of this fluctuation, British iron becomes too high to import under a revenue duty; in the other too low to admit of home production. In the one extreme we cannot afford to use it; in the other, it paralyzes our efforts to manufacture for ourselves.

The legislation asked by American manufacturers deserves not the odium so frequently heaped upon it. We know that we can furnish to the consumers of this country a million of tons of iron cheaper and better than it can be had abroad. We ask for defence against those commercial fluctuations which occur in Great Britain, from causes wholly originating there, and which, while they thrust down the prices of iron there far below the cost of making, throw large and irregular quantities into our ports, disturbing the regular course of industry here, breaking down our markets, and carrying ruin, at each such invasion, into many establishments. If we ask aid against such irregularities, it is no more than we should be obliged to do, if the manufacture in the United States were as greatly developed as in Great Britain, and enjoying, in all respects, equal advantages. If that were the case, each of the equally powerful competitors would seek to relieve their home markets in seasons of depression, by thrusting the rejected surplus upon his rival; and each would seize the opportunity of high prices in the other to make large exports, until both markets, unable to maintain any high prices to compensate for unfavourable periods, would sink into hopeless depression, and the business perish or be greatly impaired. Against such consequences both would appeal to their respective governments for protection, not for monopoly; for that security against ruinous fluctuations, and that regularity in sales, indispensable to the success of industry. Competitors at home can observe their mutual progress, and take their measures of defence in time, but that competition

which comes from abroad, cannot be watched, nor preparation made for its sudden inroads. If the British manufacturer is prevented from flooding our markets at less than the average upon which his business thrives, a mere revenue duty will be ample protection against the great advantage he enjoys, of employing labour at less than half the cost paid in the United States.

Among those most deeply interested in the vigour and prosperity of our iron manufactures are the farmers who furnish food, and the planters and manufacturers who furnish clothing, for our operatives in iron. We cannot here fully unfold the chain of mutual interests which binds all branches of industry together, nor exhibit its strength, and the importance of preserving it unbroken. We ask attention to only a few prominent facts. When the ports of Great Britain were opened to our agricultural products, it was fondly hoped that our farmers would find there an unlimited market for wheat and maize. At the present moment, however, these are very little higher in Liverpool than in Philadelphia, and the pressure of any increased export would sink prices there below ours. At the present rates of iron and flour in Liverpool, the flour made from an acre of good wheat will about exchange for a ton of pig iron, and pay for its transportation to this country. If we take the product of the acre at four barrels, worth now in our market $18 or $20, it will exchange here for a ton of pig iron of far superior quality.

But farmers who feed the manufacturers of iron in the United States do much better than exchanging the product of an acre for a ton of pig iron. A furnace yielding 4000 tons of pig iron gives employment to two hundred labourers, each of whom consumes annually fifty dollars worth of food. Of this but one-tenth is expended for bread; the remainder is consumed in the shape of mutton, veal, pork, beef, poultry, potatoes, turnips, beets, and other products of garden, field, and orchard; the production of which in great variety is an accompaniment of all good husbandry and profitable farming. To import 4000 tons of pig iron requires the product of 4000 acres of wheat. But in our home markets the product of 500 acres will exchange for 4000 tons of pig iron. An acre of potatoes, the cultivation of which does not exceed that of Indian corn, will exchange for eight tons of pig iron in the markets of Philadelphia. The farmer who, with 100 acres of wheat, prefers the foreign market, will receive for his crop 100 tons of pig iron, at present rates worth $2000, whilst he who has a hundred acres of potatoes can exchange his crop at home for 800 tons of iron, worth $16,000.

Wheat sent to a distant market, which fluctuates according to the supply and demand, must be sold without reference to the cost of production, and without control of the producer, for what it will bring in competition with all the world. What the farmer sells at home is at his own price, and is sold or held according to his discretion. Well cultivated lands dependent on a foreign market may be worth from $5 to $20 per acre; those that have the full advantage of a home market are worth from $50 to $200. If the production of iron in Pennsylvania were continued in full activity for ten years, it would double the value of her own lands and make a vast contribution to the value of other lands and property beyond her boundaries.

What is applicable to the propriety of sending wheat to a distant market to be exchanged for iron, is just as true applied to the expediency of sending raw cotton to England, to be exchanged for manufactured cotton, or any other foreign goods. The cotton plantations can feed the operatives necessary to manufacture all their cotton; and such a policy would triple the value of every cotton plantation in the country. To produce this additional quantity of food would probably require no more labourers than are now employed in growing cotton. It would only require that division of labour which is as

important to the success of the planter and farmer as to that of any other producer.

To manufacture 800,000 tons of iron, the present product of the United States, gives support to upwards of 250,000 persons, to whom at least twenty millions in wages must be paid. Of this sum $4,000,000 will be expended in coarse cotton fabrics for clothing and furniture, $3,000,000 for woollens, and $3,000,000 for other items of clothing and domestic comfort. The $20,000,000 earned by the operatives in iron will thus be diffused over the whole country, giving vigour and activity to numberless branches of industry. The South will furnish cotton, sugar, and rice; the Middle States bread, potatoes, and meat; and the Northern States the products of the loom; whilst thousands of tailors, hatters, shoemakers, and other tradesmen find constant employment in ministering to the necessities of the makers of iron, consuming themselves an additional quantity of food and clothing by a demand distributed in like manner.

It is said the domestic cost of manufacturing iron is too high to be sustained by any sound legislation, or to warrant any large consumption. We reply that our whole supply cannot be imported as cheaply as we manufacture it; for the reason that the cost is not the only controlling element of price, and that our large demands, if made upon the British market, would quickly enhance prices far beyond the domestic rates. We must, therefore, manufacture at home at least three-fourths of our consumption; and, to do this, our manufactures must be maintained in full vigour by remunerating prices and a steady market. Iron costs twice as much to manufacture here as in Great Britain; because employers here pay double, and more than double, for wages for labour. The labourers of the United States can be fully employed at the high wages which prevail here, and we are not prepared to say that these wages are more than a just compensation for labour. It is certain that in most countries where less rates are paid, a large mass of the population is in a state of destitution, and sunk to the lowest grade of human existence. In this country, where physical well-being is so easily attainable, should we not feed, clothe, and lodge our labourers in comfort, and keep them out of the poor-house? The wages now paid are only sufficient for this, and to enable the prudent to make some savings for sickness, reverses, and old age. We are not, therefore, in favour of any system which contemplates a reduction of wages, and a consequent degradation of our working men. We believe that the consumption of every country is regulated by the wages of the labourer: if he is liberally paid, he will consume freely. The mass of the consumers in a country must be the labourers; and, when these are able to exact a fair compensation for their toil, all prices must soon be adjusted upon the same scale. The manufacturer will demand for his product a price proportioned to the cost of labour; the farmer must do the same, and so on through the whole circle of industry. The labourer himself contributes to sustain these prices by a consumption proportioned to his income. All persons concerned in this adjustment being in a condition to ask and obtain justice, the whole system of consumption will be regulated by the rights of all and the means of all. In this state of things, the largest possible consumption can take place; because it will be the result of a fair exchange. The stimulus to exertion and increased production will be complete, because every product of industry can be exchanged, at a fair rate, for other products. If no disturbing cause intervenes, the production and consumption need have no other limit than the physical ability of the producing parties and their mutual wants.

In full activity of business in the United States, our consumption of iron has reached 100 lbs. for each person. If no disturbing cause had interfered, we should now be consuming 200 lbs. Our farmers could amply feed the

labourers needful to such an increased production, and our machinists and mechanics could soon, under the operation of such a system, work up and prepare it for consumption. Every branch of industry would have all the rest for customers; and, if all measured their values by the same scale, all would be rewarded according to their industry. It is well known that low prices of iron are no boon to those who buy to work up and sell, and that the seasons of highest prices are often periods of largest consumption. In 1847, pig iron ranged above 30 dollars per ton in this country, yet at these high prices the whole stock of that year, estimated at 750,000 tons, was consumed; all the old stocks and remnants were swept off, and it was perfectly apparent, to those well acquainted with the state of the market, that there was an actual deficiency of supply to the extent of very nearly, if not quite, 100,000 tons. In 1849, with pig iron at 20 dollars and bar iron at 50 dollars, the consumption of the country has probably fallen off one-third, and the production one-half. With this diminished production domestic stocks are now accumulating rapidly. Of the amount imported this year a very large proportion yet remains in the market. The quantity of iron now on hand in this country is estimated at 300,000 tons; and of this one-half is British. The manufacturers of castings, of machinery, and hardware now find that the consumption of their articles is checked, and that the low price of their raw material is not only no benefit, but a positive evil, and they are ready, equally with the makers of iron, to ask for a remedy. A similar result will be found by comparing all the periods of high and low prices.

To whom, then, enure the advantages of cheap foreign iron? Abundance of food is no more beneficial to a man in the agonies of a fatal disorder than cheap iron to a paralyzed industry. The ability of the country to consume iron depends on the vigour and activity of all departments of industry. If agriculture languishes, the consumption of iron is diminished; if the machinery of the north is idle, or partially so, the demand for iron falls off, and so if cotton or sugar is selling at inadequate rates.

At the present moment, various interests are suffering from the utter stagnation of the iron trade, as the operatives in iron will this year, 1849, consume in supply of their wants some twelve millions of dollars less than in 1847. This alone is enough to carry serious injury into numberless channels of industry. It especially affects the consumption of cottons and woollens; for the use of these can be abridged to a greater extent than food. All interests are, therefore, bound together by common ties; when one suffers, all suffer. It is a great mistake to suppose that the producers of cotton, sugar, rice, and tobacco have no special interest in the activity of manufacturing industry in the other States. A very large proportion of the cotton crop is now consumed in the United States, and thus kept from the British market, already so liberally supplied as to give British merchants control of the price. When British iron is exported to us for want of a market at home, we take it at our own price; when we order large quantities of iron, we pay what they can exact. Our cotton is mainly exported, disgorged upon the British market, and the price is made in Liverpool. When British manufacturers shall be compelled to come hither for their cotton, the price will be made by the planters. The present supply is so large, that the price is yearly the result of mere speculation. What is sold in this country is clear gain to the planter, as the whole crop would sell for no more in Great Britain than the quantity which now goes there. If half the crop was consumed at home, the other half would sell for as much in Great Britain as is realized for the quantity now exported. This result is not only attainable under favouring legislation—but it might have been attained before now, by that wise policy which stimulates home industry to its utmost capacities. By such a policy

the consumption of cotton and iron could be doubled in a few years, with immense advantage to the wealth and happiness of our whole population. It is the interest of the planter not to struggle for that division of labour among nations; which makes one nation a planter of cotton; another of sugar; another a maker of iron; another a spinner; another a weaver; another a tailor; and so on; but that division of labour which mingles these pursuits in the same country, in the same county, in the same town, and, to some extent, on the same plantation. This is the division of labour which begets a vast production and consumption at home, and an internal trade with which no foreign commerce can ever vie.

Who can doubt that, if the planting States were legislating for themselves, their first care would be to become more independent, to diversify their labour, and vary its products? What such legislation would compel them to do, they can now do under that national legislation which is invoked by others. They are already entering upon that career—it will be found not only the sure road to prosperity for them, but also for us. We so fully confide in the doctrine of the division of labour at home, that we not only trust the cotton planters will manufacture as much of their cotton at home as they can, and feed the operatives thus employed, but also manufacture as much of their iron as they can. There is room for all, work for all, and market at home for such a large portion of our products that the remainder will not overcharge the channels of foreign commerce and be sacrificed for the advantage of foreign merchants and manufacturers.

We object to the doctrine that industrial pursuits are subordinate to foreign commerce; and that the latter is to be considered as the rightful patron of industry. In our view, industry stands first in natural order, and should be the first care of the legislator. Commerce is merely an agency, the charges of which, as well as its powers, should be kept to the lowest point consistent with efficiency. It may suit those engaged in commerce to insist upon the "Let us alone" policy, for doubtless merchants can take care of themselves, and thrive not the less, when the producers, from whom their profits come, are suffering most. The manufacturer has, in all countries, asked for special legislation, and under its good effects the present manufacturing systems of Europe and this country have grown to their present magnitude. The relative importance of the domestic production of this country and its foreign commerce may be seen in the fact that our foreign commerce yields from six to eight dollars worth of foreign commodities to the consumption of each individual of our population; whilst the domestic industry of the country furnishes not less than from 75 to 100 dollars for each person. Shall we pursue a policy impairing the power that produces the larger supply, in the vain attempt to add the worth of a dollar or two a head to the quantity of foreign commodities consumed? And be it noted, that every dollar a head added to our consumption of foreign goods adds over 21,000,000 dollars to our imports.

If an ample supply of iron be indispensable to national progress and national welfare, and if the whole of that supply cannot be imported as cheaply as it can be made at home, the principle which should govern legislation applied to this industry, and to others in like circumstances, is clearly discernible. If home production, on which we rely for more than three-fourths of our consumption, is not sustained in that activity which ensures its proceeding with economy and advantage, it must flag; and the product being diminished, a greater demand must be thrown upon the foreign market, enhancing the prices of importation. But if the home production is adequately sustained by a free market, it can supply all the channels of consumption. Legislation, marking closely the line of vigorous productions at home, will encourage

importation, with the double purpose of obtaining revenue and keeping the manufacturers at home to fair prices.

Sustain the domestic manufacturer at the point of full production, and then admit the foreign article freely. The more closely our revenue enactments approximate this object, the more perfectly will they encourage domestic industry, obtain the largest attainable revenue, and best secure the interests of consumers. The manufacturer, constantly struggling to keep up his prices, will be as constantly met by foreign iron, selling at such rates as to keep him to the line of public advantage. It is the operation of a well-managed competition between the domestic and foreign producer, which results in the greatest benefit to the consumer. If the consumer is driven to a foreign market for his supplies, or for too large a proportion of them, prices will be inordinately advanced against him; while, if the foreign market is prohibited, or too heavily burdened, the same undue advance may take place at home. But if foreign iron is introduced at the point designated, it not only works no injury, but produces positive public good, as to revenue and prices, and also as to the increased consumption of iron. There are certain average rates, at which manufacturers of iron in this country can live and flourish, and these rates are very little, if any, above those to which the often recurring fluctuations of prices in Great Britain are carried. At these rates, which are easily ascertained by the legislator, the line of competition can be established, with the greatest advantage to the consumer. They will not exclude foreign iron; but frequently attract it. During the last fiscal year, the very large importation of 315,000 tons of iron has taken place. Of this, much the larger proportion has probably been sent to us on foreign account, because there was no demand at home; it was sent to save the home market, already broken down, from further depression. It has broken down our markets; and, if sold at present rates, will not yield the makers a penny of profit. This iron, coming thus to a bad market, came because it would have been worse for the holders to keep it at home. If previous legislation had shielded our market so as to maintain prices remunerating to our manufacturers, the additional duty necessary for this purpose would not have deterred the export of iron to this country; for while those who shipped it to our ports must have paid a higher duty, they would have realized better prices. A ton of iron rails, under the present tariff, at the prices prevailing in 1846 and 1847, was charged with a duty of twenty dollars, which was almost prohibitory, and therefore produced little revenue, making foreign rails cost 90 dollars per ton. During the year 1849, a ton of rails has been charged with only eight dollars, and has, of course, produced but little revenue; whilst a ton of rails were laid down in our market at 45 dollars, injuring the domestic producer to an extent that is incalculable. A system of revenue which would meet the low prices by a proportionate increase of duty, and make provision for high rates by a like reduction, never excluding the foreign iron, would, we believe, meet the exigencies of domestic industry, and greatly increase the revenue. Whatever may be the advantages of the *ad valorem* system in other cases, they are more than neutralized by the fluctuations of the prices of British iron. It is true that a part of this objection applies with equal force to specific duties; for, when these are high enough to meet the difficulty of low prices, they become prohibitory when prices rise. These considerations furnish a strong inducement for special provisions in our revenue system in regard to foreign iron. A system could thus be devised which would give a mighty impetus to the production and consumption of iron, and to other dependent branches of industry. A home competition could be thus ensured, which would, in the end, reduce the price of iron to the lowest limits consistent with undiminished production. Under such a policy, we should soon

surpass Great Britain in the quantity of iron made and consumed, as much as we do now in the quality. We should employ hosts of labourers, and attract them hither from all quarters of the world; and for every million of people which this scene of industry would draw to our shores, we should be furnished with an additional home market, equivalent in amount to and far more remunerative than the average export of our foreign trade.

In closing this memorial, we ask your intervention in our favour, and the insertion of such provisions in our revenue laws as will "regulate commerce with foreign nations" in iron, and exclude from our markets the results of those destructive fluctuations and irregularities which originate in foreign causes, and should expend their force on foreign shores. This being done, we only ask further that such duties be imposed upon foreign iron as will bring the largest revenue to the public Treasury.

Extracts from a Paper submitted by the author of the Memorial.

A PROTECTED MARKET.

There is great misapprehension on the subject of the PROTECTION asked for industry. The term is ill-chosen; because it implies special favour granted to particular branches of manufacture. But it is far from being a mere concern of individuals; it can be shown to be equally a matter of public policy. Suppose the makers of iron in Great Britain and the United States to have equal advantages, and that the manufacturer is carried to the utmost extent and the lowest point of remuneration by the home competition in each country; and that the average price in each is the same. If any state of industry could, with advantage, dispense with protection, it would be the case supposed. But it would be clearly the interest of both countries to protect their home markets, even in this case of perfect equality. It would be sound policy to keep the manufacture of an article so important as iron in prime vigour and progress, that the quantity might be increased, and the price reduced by the gradual process of home competition, which, in a protected market, is a severe but sure operation. One of the greatest trials the manufacturers encounter in such cases is that fluctuation which occurs every few years in all mercantile communities. To bear up under all these, and maintain the full vigour of protection, is a hard trial upon makers of iron, the more so, as in their case their expenses do not admit of being abridged, nor can their manufacture be diminished under a limited demand without heavy loss. Seasons of depression must come in both countries in the case supposed —periods when the markets of each would reject, and be unable to consume, the ordinary quantity. It must be thrown somewhere, for neither makers nor merchants are able or willing to hold the surplus of iron until business recovers its tone and makes its usual demand. If the iron thus remaining on hand in Great Britain is thrown into our markets, it will wholly break them down if firm, and increase and continue the depression if already down. Between the two countries, while prices were up, there would be no transactions in iron, but the conflict would be incessant in periods of depression. It may be safely assumed, however, that without help the manufacturers could never recover from such a conflict; a few years would end the struggle by prostrating a large portion of those engaged. The business would have to be re-organized.

It would be sound policy, therefore, to protect each of these markets from the irregularities of the other. This course is best for the makers of iron, as well as for those who are special consumers, to whom it insures, in the long run, the cheapest supply.

FOREIGN IRON—ITS INFLUENCE ON PRICES.

As every country is dependent mainly on its own industry for its supplies, it is important that the industry which furnishes these supplies should be suitably sustained. The prices of the nine-tenths furnished at home should range at such rates as to keep the production active and increasing. Unless it can be demonstrated that the whole supply could be permanently imported cheaper, it would be suicidal to extinguish the industry on which we are dependent for nine-tenths, in a vain experiment to purchase cheaper elsewhere. The prices in the home market should be such as are made by fair competition in the home market, in which all parties interested can take care of themselves. If our iron is made at home, all the labour which goes into the cost should be adequately compensated; the farmer who furnishes food for man and horse, the manufacturer who furnishes raiment, the labourer and operative who are immediately employed in the production. All these and the consumers must settle the price; the elements are among them, and their combined action must maintain a result the nearest to justice, because they all look to their own interests.

It is unjust and unwise to disturb and change this result by introducing a new element in a supply derived without restriction from foreign trade. Upon that trade we are not in any sense dependent for pig and bar iron; we should, indeed, at this time, be makers and consumers of a much larger quantity than we have yet used, if we had not imported a ton of iron the last 20 years. We make the *quantity* we consume, much cheaper than we could import it. Is it just that the tenth of our consumption which we import should regulate, to the injury of the makers of the other nine-tenths, the prices of iron in this country? Yet the price is for the most part controlled by the movements of foreign trade. It happens that our sea-ports are also the chief markets for distribution of our domestic iron. The prices of every country or district are made at its chief markets. If the consumption of iron on the sea-board is 300,000 tons per annum, the import of 50,000 of foreign iron will control the prices, because it comes in to be sold for what it will bring. It is at once offered below the domestic article, and consumers seeing a disturbing cause in the market, pause until the effect is seen. A pause in the purchase of iron produces a fall, because some sellers must realize, and buyers take the advantage and keep it. The whole mass of the domestic iron is brought to market to keep pace with consumption, and the price demanded is a remunerating rate, and unless this is obtained the business must perish. The quantity imported is a mere overplus—a remnant from British markets, the sale of which at high or low rates is not a very important or vital matter to the manufactures who sent it. At most, it is but 10 per cent. of their product, and may be considered as their profit, greater or less, as sold. What is vital to them is their *home price;* if that is fair on the average, they can afford to risk 10 per cent. of their production in our market. Let any one who knows how prices are made to vary, not only by actual events, but by rumors and suspicions, reflect upon the effect of an additional 10 per cent. of a foreign article thrown in upon a previously balanced market, and he will perceive not only the necessary depression but the injustice of it to the industry affected.

But there is a feature in foreign trade which greatly increases the mischief of leaving the market under its control. It is to a most extraordinary degree uncertain and fluctuating. The importing merchants are governed in some degree, doubtless, by the actual demand, and their imports might, if exhibited, separately show some regularity. But a large portion of the imports are sent upon speculation, and the quantity depends on markets abroad and the thousand contingencies which may determine a larger or less export to our

shores. The irregularity of our imports of iron from Great Britain is so striking as to demonstrate the impolicy and injustice of making the prices of the domestic product subservient to it. Beginning with the year 1820, coming down to 1845, and leaving out the fractional hundreds, the following figures exhibit the number of thousands of tons of iron of all kinds imported into the United States from Great Britain each year in its order:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1820,	8,000	1830,	21,000	1840,	72,000
1821,	9,000	1831,	41,000	1841,	112,000
1822,	15,000	1832,	45,000	1842,	107,000
1823,	13,000	1833,	62,000	1843,	38,000
1824,	11,000	1834,	47,000	1844,	102,000
1825,	13,000	1835,	63,000	1845,	68,000
1826,	12,000	1836,	91,000	1846,	———
1827,	21,000	1837,	54,000	1847,	———
1828,	22,000	1838,	78,000	1848,	———
1829,	17,000	1839,	85,000	1849,	315,000

These figures show a variation in the supply of iron derived from Great Britain of from 10 to upwards of 200 per cent., between one year and the next. Small as this quantity appears, compared with our whole consumption, it would always control the prices in New York, and thence those in the country. How little these fits and starts of commerce are like the sober pursuits of industry at home, where the annual product only varies to increase with the gradual increase of labour, capital and consumption.

How can it be just to make the labourer's wages depend upon the variable movements of foreign trade?

MANUFACTURE OF IRON.

We cannot manufacture iron in the United States as cheaply as it is made in Great Britain. Because:—

1. The erection of furnaces and machinery costs from a third to a half less, there. Iron enters largely into these constructions. The wages of all mechanics are not more than half our rates.

2. The wages of the operators in iron works are about half that which is paid here.

3. The cheapness of money there has enabled the manufacturers to prosecute their business with more vigour and more economy; and to introduce at once many modes of saving expense, the cost of which cannot be reached by makers here.

4. The manufacture in its present improved processes has many years the start there. We might, and, with our home market secured to us, could soon equal them in all departments, as we do in many now.

If we could import and pay for our whole supply at the low rates, it would be more difficult to refute the advocates of the cheap market. The iron market in Great Britain affords a spectacle of fluctuation and speculation which has scarce any parallel. The range of prices varies from below the cost of manufacture to one hundred and fifty per cent. advance upon the actual cost. It has been with British manufactures, for the last twenty years, a constantly recurring feast or famine. Iron being an article not subject to deterioration, it is deemed safe to hold, and speculators step in when prices are at the lowest. Not only so, but at extremely low rates, iron enters into a large consumption, for which it is too expensive at higher rates. At the low rates, this increased consumption begins; contracts are made, enterprises are commenced, plans and estimates are gone into, which produce at last an effective demand for iron sufficient to enable makers and holders to advance the rates in proportion

to the wants of buyers, who hasten to supply themselves when the advance begins.

PROGRESS OF THE MANUFACTURE OF IRON IN GREAT BRITAIN.

These fluctuations in price cannot be wondered at if we note the progress of the manufacture. The following is the estimate of the quantity produced in the years named:—

Year.	Tons.	Exported to all the world. Tons.	Consumed.
1810,	294,642		
1820,	368,000	91,766	276,234
1825,	581,367	69,328	
1830,	678,417	130,417	
1835,	1,000,000	219,203	
1840,	1,500,000	268,328	1,231,672

The increase in product in thirty years was over five hundred per cent.* The increase in the export was less than three hundred per cent. The increased consumption was very nearly five hundred per cent. There was in that period no parallel to this progress in the world. It is not hard to comprehend the share which this increased consumption of iron had in the *material progress* of Great Britain.

If this manufacture is not overdone in Great Britain, it would be difficult to find any business overdone. It is only possible to keep up this large production through the operation of those fluctuations, by which, in times of depression, the iron is taken into a large consumption at the low rates, and by which the makers indemnify themselves for the losses of one period by the high prices of another. By this system they export largely when they can do no better, and raise the prices so high at times, that exports must be greatly diminished. Upon this system of variation, the makers there thrive; but can these fluctuations be introduced elsewhere with advantage, or even without ruin? They are an incident to over-production there—they are an incalculable injury when brought to bear upon our industry.

PROTECTION OF PRICES.

As the progress of the manufacture of iron in Great Britain is one of the greatest achievements of industry in modern times, it may be worth while to consider what protection fostered and secured this wonderful growth.

Previous to this growth, pig iron had been scarcely known in commerce. England had no rival in the production of that article that could disturb her markets. The price may be shown thus:—

1782 to 1803	20 years,	£3 to £4	Average £6.
1803 to 1818	15 years,	£7 to £9	Average £8.
1818 to 1840	22 years,	£4 15 to £11	Average £6.
1840 to 1849	9 years,	£2 to £5	Average £3 5.

* The increase in fifty years was one hundred per cent.

It will be seen that down to the year 1840 from 1782, in which period the production of iron in Great Britain had increased from 150,000 tons to 1,500,000, or tenfold, the makers enjoyed a price averaging over £6, and very seldom below £5. Upon this price the business flourished beyond precedent. After 1840, it became evident that there was an over-production, and the British market broke down. The price of Scotch pig, which, after 1840, controlled the market, fell to £2, and even below that rate. It became the subject of speculation and fluctuation beyond any article of commerce.

It was the protection of this continued high price, for 50 years, which stimulated the production of pig iron. The revenue duty of 27½ per cent. was of no consequence, the importations of pig iron were too small to have any effect upon the markets.

Large importations of bar iron were made into Great Britain between 1782 and 1840; but that it may be clearly seen how far this importation interfered with the domestic product, note the prices of Russian and Swedish bars, the only kinds largely imported.

Russian Bars,	1782 1795	13 years, from	£10 15 16	Average £16.
Do.	1795 1803	8 years, from	£17 25	Average £21.
Do.	1803 1820	17 years,	£12 10 22	Average £16.
Do.	1820 1840	20 years,	£14 26	Average £19.
Do.	1840 1849	9 years,		Average £16.
Swedish Bars,	1782 1795	from	£14 15 18	Average £16.
Do.	1795 1803	from	£19 26	Av'ge £22 10.
Do.	1803 1820	from	£15 10 21	Average £17.
Since	1820 the average has been about			£13.

The above prices are exclusive of duty, which was increased from £2 16s. 6d. in 1782, by *ten different advances*, to £6 10 (and £7 18s. 6d., in foreign ships), in 1820.

These prices were, indeed, in no degree an obstacle to the British manufacturers; they were, in fact, so high that no heavy importations could take place.

The largest importation in any year between 1800 and 1814 of bar iron, was 52,873 tons in 1802; during nine years of that period the importation did not reach 30,000, and was sometimes below 20,000 tons.

From 1815 to 1840, the largest quantity of bar iron imported into Great Britain, was 25,033 tons in 1836, but the average for the whole period was considerably below 20,000 tons.

The British manufacturers required no legislative aid after 1800, yet such caution was used that the duties were increased from time to time to 1820, and were not removed until 1825.

PROTECTION IN UNITED STATES BY PRICES.

The British maker had competitors who furnished iron, exclusive of duty, at from $65 to $100 per ton.

The competitor of our manufacturers has furnished bar iron,

From 1815 to 1830, at $50 { highest $72. / lowest $31.

From 1830 to 1849, at $38 { highest $55. / lowest $22.

But low as the averages are, compared with those against which the British manufacturer had to contend, they afford an inadequate idea of the destructive effect of this competition. The averages are comparatively high from the excessive range of the fluctuation. For three years, from June, 1820, to July, 1824, the price did not exceed $46, and did not average over $42.

From March, 1827, to July, 1836, the price did not exceed $46.

From April, 1829, to October, 1835, the price did not exceed $37.

From March, 1830, to March, 1833, the price did not exceed $33, and for a year of this period it was under 27.

For three years, including 1841 to 1843, the price was at $24, and during 1842 as low as $22.

It is such prolonged depressions as these which seriously injure, if they do not ruin, the maker of iron in the United States. He cannot meet such exigencies, neither by reduction of his expenditures, by reducing wages, nor by diminishing the amount of his product. He must continue his business at a serious loss for years, or he must stop and be ruined.

It cannot be doubted that these periods of low prices have hindered the progress of this branch of industry to a very important extent. It is scarcely extravagant to say that, with the same comparative protection which has been enjoyed in Great Britain, the product here would now have been scarce less than that of that country. If the home market had been equally secure to the makers here, as that of Great Britain was to the makers there, the consumption of iron here might now be 1,500,000 tons. The higher price would have been no obstacle; for, where all labour receives a corresponding compensation, the price is no obstacle in the exchange of labour. These fluctuations in prices, introduced from Great Britain, have proved an incalculable evil to the whole industry of the country. The fact, that a portion of our annual supply has been imported at a very low cost, much lower than it could be produced for here, is no alleviation. Instead of consuming more, we have consumed less. Our consumers say that they work up far less iron at the low rates than when business is proceeding on the basis of home prices.

If, owing to the low prices of British iron, we consume 200,000 tons less of domestic iron, we prevent the circulation of a value of $10,000,000, which, at $50 as the average per ton of pig and bar, would be its cost in food, labour, clothing, &c. All who are concerned in this great exchange are thrown out of their usual routine of employment: the farmer loses his market—the labourer his wages—the manufacturer his living—all are made less able to consume, and of course others who are dependent on them feel and suffer by the change, until the $10,000,000, by endless ramifications of the channels in which its benefits would have been felt, becomes hundreds of millions in its consequences. The effect of stopping the domestic manufacture is to throw business entirely out of the usual channels. It is too absurd to be held by any one, that the

elements which would go to make 200,000 tons of iron in the United States could be made available to import that quantity and pay for it. If imported, it must be paid for in something else than *iron ore, coal, wood, veal, mutton, potatoes, turnips, oats, rye, corn, and American labour.*

FREE TRADE.

It is a strange feature of free trade doctrines, that while they regard commerce as the great patron and regulator of industry, they wholly omit to make any allowance for the effect of commercial movement upon prices. The ability to make goods cheaply implies, with them, a willingness to sell them cheaply, without change of price. If all taxes, duties, and restraints were removed from commerce, the advocates of free trade seem to think the very facility of movement and transportation would furnish all the stimulus industry requires. They omit all notice of the fact that merchants, to whose tender mercies the producing classes are invited to commit themselves, are as much addicted to habits of thrift as other people; and that prices fluctuate more by these movements, and are more influenced by their operations, than by the efforts of producers. Merchants, in proportion to their number, are far better paid than manufacturers, and when the latter are starving, the former are often making large profits. It is quite as acceptable to the merchant to make a large profit on a few goods as a small one upon many. The interest of the producing classes is to furnish a large product and a large exchange, that the comforts, luxuries, and benefits of mutual industry may be extended to the largest number. It is their interest to reduce commercial power and influence to its just minimum, because it is a charge upon industry. All the profits of the merchant are laid upon the consumer, and proportionably reduce the ability of the consumer to increase his consumption, and thereby make a large demand upon the producer. The truth is, that merchants have grasped a power and wield it for their own benefit, which enables them to oppress both producer and consumer. However necessary this may be, the merchants are certainly not the appropriate patrons of industry; they, as shrewd men usually do, take care of themselves, and whether trade is free or not, no men can be in a better position to keep guard over their own interests. They survey the whole field of trade; occupying an intermediate post between consumer and producer, it is their interest to buy as cheaply as possible and sell as dearly. It is at their instigation that the doctrines of free trade are so loudly proclaimed. They and their friends are no doubt sincere. There is one great fact, however, which cannot be explained upon their principles—that industry, widely diffused industry, manufacturing industry upon the mighty scale now seen in Europe and the United States has grown up under the protection of commercial restrictions. The productive powers of man were never exhibited before the days of protective duties as they have been since. Commerce was free when Tyre, Carthage, the Grecian cities, Alexandria, Venice, Genoa, the Hanse towns, Holland, at their several periods of prosperity usurped the trade of the world. The merchants were then all in all—the merchants were princes, the producers slaves. Free trade would rapidly tend to the same results now.

If the question related solely to the prosperity of trade, there might be force in the position, that men in trade should be allowed to take care of themselves.

The problem for solution is not what will most promote the interests of those engaged in commerce, but what will best promote the interests of all.

So far from being that department of industry which most requires the care of government, or rather best deserves to have its wishes granted, commerce is really a tax, an incumbrance upon industry, to be reduced as far as

practicable. It is the expense incurred in distribution—an expense which, like all other mere expenses, should be kept at the lowest point consistent with the end in view.

What, then, will most promote the comfort and material well-being of the mass of the people? We reply, that industry, which furnishes the largest product for the consumption of the masses, whilst all the producers receive, by a fair exchange for their labour, their full share of those articles which minister to comfort and physical well-being; that industry, which, while it is thus successful in securing physical benefits, has a surplus large enough to maintain a good and efficient government, and all the advantages and enjoyments which belong to education, morality, philanthropy, and religion. Are these benefits to be obtained by merely removing restraints from the plans and movements of men in trade? This is no more true nor wise than to say that there should be no *checks or locks* upon the wheels which carry the goods to market.

We must inquire, what are the circumstances in which men will and can exert their utmost productive powers. Clearly, where they consider their compensation most secure, and where the division of labour can at once, and in the same locality, be carried to such a point that a large exchange of labour can be effected, free from the expenses of transportation and intervening profits. Producers being consumers, and these being also producers, that is their best business which is done most directly, because it is that in which they are most likely to obtain mutual compensation in the results of their mutual labour. In all large manufacturing operations, one of the first considerations entertained by those who contemplate such undertakings, is, the facility of selling the products in such quantities as may enable the manufacturer to sustain his business at the low prices to which competition may force his sales. The ready sale of the product is vital to the business, even if the profits are reduced to zero. The annual expenses of a blast furnace are, from $200 to $300 each day, an expenditure which will rapidly absorb the working capital of its owner, if not replenished by corresponding sales. In many of the iron establishments of this country, the daily outlay is equal to, and in some, over $2000. A regular market is, therefore, indispensable. The manufacturer may estimate with reasonable correctness the demand and the competition of the home market, but must be wholly at fault in conjecturing what interference may come from abroad. He knows that his market at home may be disturbed, and, for a time, destroyed by any undue ingress of the foreign article; for experience has taught him that his sales are at an end for a time when a cheaper article appears. When this happens, buyers become "bears, and operate for a decline," and this they effect by ceasing further purchases, until the market finds its lowest point—that is, until the necessities of the manufacturer compel him to come to the terms of the buyers.

NECESSITY OF A HOME MARKET.

The necessity of securing the home market to the home producer may be thus stated: A manufacturer has observed that his country has for a long period, been supplied with a certain article at a range of prices at which he thinks he could furnish it. He consults the consumers of the article, and they encourage him to go on, agreeing to give him the preference. He makes a large outlay and begins his work. His goods go off freely and he has the market. The foreign article must now be withdrawn or reduced in price; it cannot be withdrawn, for there is no other market, and the price is reduced. The home producer is now receiving his first lesson, and he must

reduce his rates also at the first stage of his operations; the foreigner only after a long period of success. It becomes now a struggle for existence: the foreigner having the accumulated wealth of a long career, determines to extinguish his young rival, and again reduces the price. The home producer applies to the government for protection, and though the whole array of free trade arguments are brought to bear against the application, it prevails, and a specific duty is laid which gives the producer a price at which he can maintain his production in full vigour. The foreigner, determined still to conquer the market, reduces his price according to the duty, or, in other words, pays the duty and enters the lists again. At this stage of the struggle, the whole quiver of free trade weapons are let loose upon the monopolist, who is charged with receiving a premium to the whole amount of the duty, to sustain a manufacture that ought never to have been started. The absurdity of not buying altogether in this cheap market, strikes the philosophers of the closet so strongly, that they cannot express their surprise at the dull intellects of mere men of business. To resume our case: the home producer is again forced to ask further protection, and to say that his business must perish if he does not obtain it. Again common sense prevails over theory; a heavier duty is laid and his business revives, though suffering severely from these interruptions, and by no means in the state of efficiency it would have been but for their influence. If it be supposed that the foreigner is unable to continue the struggle unaided, he applies next to his government for the removal of certain taxes, charges, duties, which bear upon his products, for the avowed object of enabling him to retain the foreign market, of which he is deprived.

Thus may a struggle be carried on for many years, to the serious injury of both parties—perhaps to their ruin. The operatives engaged in the home product, thus injured, must suffer severely; while the advocates of free trade cry out "let them fight it out;" the merchants, who are the real purchasers, find their interests greatly promoted by the contest, as the lion's share falls to them.

It is thus, too, that the cheapness of a foreign market, which makes it the very climax of free trade arguments, is caused by want of demand for its goods; that want of demand arises from home production, which deprives the cheap market of their customers. The more the foreign market is thus cheapened by home production the more the necessity is increased to afford protection to that market, on which the home production is mainly dependent. Individual merchants and consumers are always prompt enough to avail themselves of a cheap market when it offers; but nations should never commit their people to the absurdity of relying upon any market because it is cheap. The policy of a nation cannot be changed with the productions of a market, but it is the business of individuals to watch the market and operate wherever advantage calls them. The United States cannot obtain her whole supply of iron from Great Britain in one quarter of the year, make it at home the next, and go abroad for it the next: nor can this be done if the quarters are extended to years, or to periods of five years.

It is worthy of remark, that while free trade theorists cry out *Laissez faire*, as summing up all the wisdom needed by governments in the management of trade, they stop the mouths of labourers, artisans and manufacturers, as not knowing, or not to be trusted with their own interests. Who are to be "*let alone?*"—the merchants. These agents, these buyers, transporters and sellers of the products of industry, ask, by their friends of the free trade philosophy, to have the whole business committed to them—to be *let alone*—while they exert every faculty, every nerve, and all the shrewdness, superior knowledge and address they possess, under the stimulus of all the selfishness

of human nature in the prospect of gain, for their own benefit. But let it be noted that the producers and the manufacturer do not cry "*let us alone*"—their cry in Europe for the last century and more has been for *protection*, and it has been accorded. Under this protection the products of Europe have increased at a rate fivefold the increase of population. But this *let us alone* policy is put forth only in behalf of the foreign merchants; the merchant of the domestic products unites with his special patrons. The foreign merchant, whose business represents but a tithe of the business of the country, asks to have the interest of the nine-tenths committed to him. This cannot be denied; let the manifestoes of free trade be examined, and it will be found that they mock at the manufacturer, scoff at his statements, complaints and petitions. It has been so for a century; yet the doctrine of protection has been in the main the policy of every modern civilized nation during that period, in which industry and the arts has made more progress in one century than in thousands of years before. It is true that, in England and in some other countries, some departments of industry have been so long and so fully protected that, with the advantage of cheap labour and cheap capital, they no longer require *protection;* and the persons interested in these branches of protection may now join in the cry of free trade, as they naturally wish to remove all obstacles to carrying their goods to all the markets of the world. These exceptions only prove their rule; they are exceptions only because the rule existed. Let manufacturers, small and great, then be heard, not only in their defence, but permit them to state what is required for their security and their success; let them be heard and regarded as representing the producing classes, the industry of the country.